

# Home Computing WEEKLY

An Argus Specialist Publication

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First issue of:  
ZX User,  
a 16-page  
magazine for  
Spectrum and  
ZX81 owners

**NEW**

MSX Computing:  
exclusive first  
review of  
Toshiba's  
new micro

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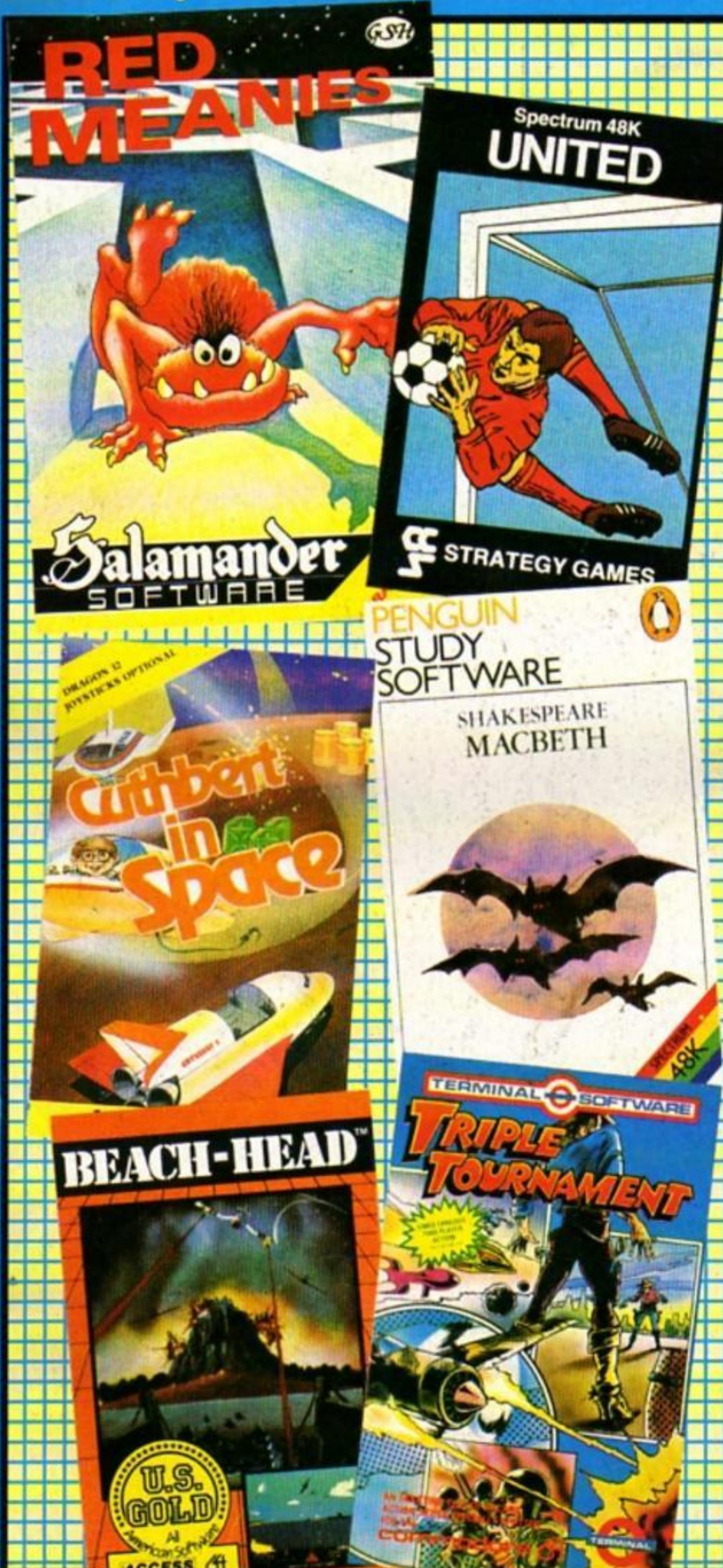
Software  
reviews for:  
BBC, Spectrum,  
VIC-20, ZX81  
Oric/Atmos,  
Dragon, Electron,  
CBM 64, Texas

Great games  
to type in for  
Commodore 64  
and VIC-20

**PLUS**  
U.S. Scene, news,  
One Man's View,  
software charts,  
your letters...

No. 65  
June 5-11, 1984

45p



## MSX Dragon on the way

Dragon is set to be the first UK computer maker with an MSX-compatible micro.

Although senior staff will not comment officially, it is known that a sample has been shown to retail chains.

Binatone's boss, Partap Lalvani, is also planning an MSX computer — but not until he can offer 64K for about £199.

And Korean giant Samsung is in the wings with its own MSX home micro, the 64K SPC 1000 which has a built-in cassette player.

MSX, developed by Microsoft, is a standard agreed by 15 Japanese computer makers for their joint sales drive overseas.

JVC, Toshiba and Mitsubishi showed their micros for the first time here at the Consumer Electronics Exhibition.

• Full show report — page 5

## Beware the undead...

Invite the Evil Dead into your house when you play the game by Palace Software. Set the scene by turning down the lights — and don't look over your shoulder in case fantasy has become reality!

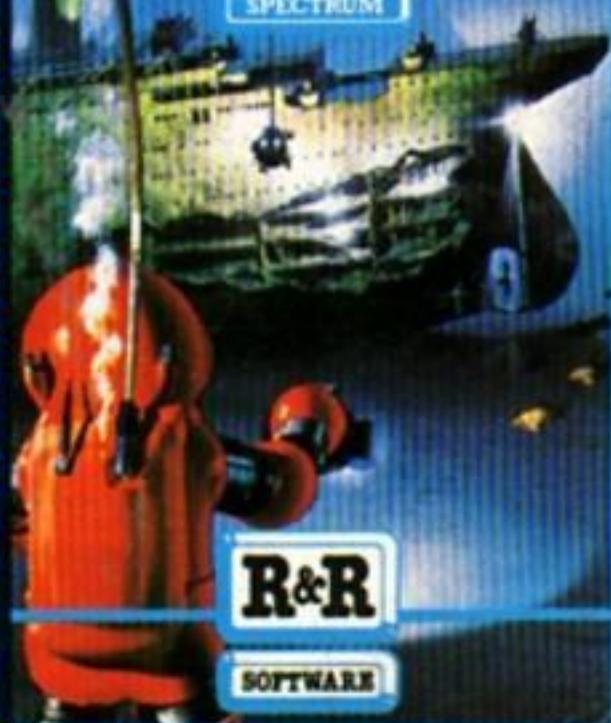
The Evil Dead is a horror movie which has acquired a cult following and was the best

Continued on page 6

## TITANIC

The Adventure Begins...

48K SPECTRUM



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## REGULARS

<b>News</b> .....	<b>6</b>
<b>U.S. Scene</b> .....	<b>11</b>
From our man in California	
<b>Software charts</b> .....	<b>24</b>
Our exclusive guide to best-selling arcade and non-arcade software, plus Top 10s for six home computers	
<b>Letters</b> .....	<b>43</b>
<b>Classified ads start on</b> .....	<b>52</b>

## PROGRAMS

<b>Commodore 64</b> .....	<b>33</b>
Your chance to win at Aintree. You start with £50 stake money... will you lose your shirt?	
<b>VIC-20</b> .....	<b>40</b>
Combat evil with good in TWO great games set in another galaxy	
<b>Oric/Atmos</b> .....	<b>44</b>
Give your letters the professional touch with our word processor by an HCW regular	

## SPECIALS

<b>£1,000 dk'tronics competition</b> .....	<b>15</b>
10 Spectrum keyboards and lots of software must be won. Can you spot the words?	
<b>MSX Computing</b> .....	<b>17</b>
All you need to know about the new computers, PLUS our exclusive review of Toshiba's new micro	
<b>Join the treasure hunt, for £1 off</b> .....	<b>21</b>
There's a glittering prize awaiting the finder... start by saving £1 off the first clues	

HOME COMPUTING WEEKLY  
BRITAIN'S BRIGHTEST



- You can trust the listings in HCW: all are tested for quality and checked for accuracy. There are programs for these micros in this issue

## SOFTWARE REVIEWS

<b>The best of the bunch</b> .....	<b>8</b>
Highly-rated programs for Electron, CBM 64, Electron, TI	
<b>Help with your homework</b> .....	<b>13</b>
Learn with your Spectrum, ZX81, Dragon, BBC/Electron	
<b>Armchair action</b> .....	<b>22</b>
Games of skill for VIC-20 and Spectrum	
<b>A sporting chance</b> .....	<b>27</b>
Games for the Oric/Atmos, Dragon and Texas	
<b>Defend yourself</b> .....	<b>31</b>
Expert advice on new Spectrum games	
<b>Make the most of your micro</b> .....	<b>39</b>
Utilities for BBC, ZX81 and Texas	

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**JUNIOR ARITHMETIC**

(For any ZX Spectrum)

An excellent educational program for 6-9 year olds. The fun way to learn and practice Addition, Subtraction, Multiplication and Division. Mistakes are corrected and explained, along with a running total of correct answers. Terrific value at just

R.R.P. £4.95

**SPECTIPEDE**

(For any ZX Spectrum)

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**GOLF**

(For any ZX Spectrum)

Enjoy a game of golf in the comfort of your own home! With the choice of a 9 or 18 hole course and the challenge of Fairway, Rough, Trees, Bunkers, Water & Green. Displays are in realistic colour graphics with full score cards. No two games are alike!

R.R.P. £3.75

**GNASHER**

(For any ZX Spectrum)

The "famous" arcade maze game with fast machine code action, excellent graphics, colour and sound. Eat-up all the dots before the Ghosts eat you, or beat them to an energy pill which will allow you to eat them! Hours of addictive fun with on-screen scoring and high-score tape save capability for just

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**STAR TREK**

(For 48K Spectrum only)

One of the original computer space games... but this program has many up-dated features normally only found on larger computer versions. Test yourself as Starship Commander as your mission takes you to the outer reaches of the Galaxy to protect Federation Space, the Starship and yourself! Excellent value at

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With the Japanese computer invasion just weeks away, three of the first MSX-compatible micros made their UK debut.

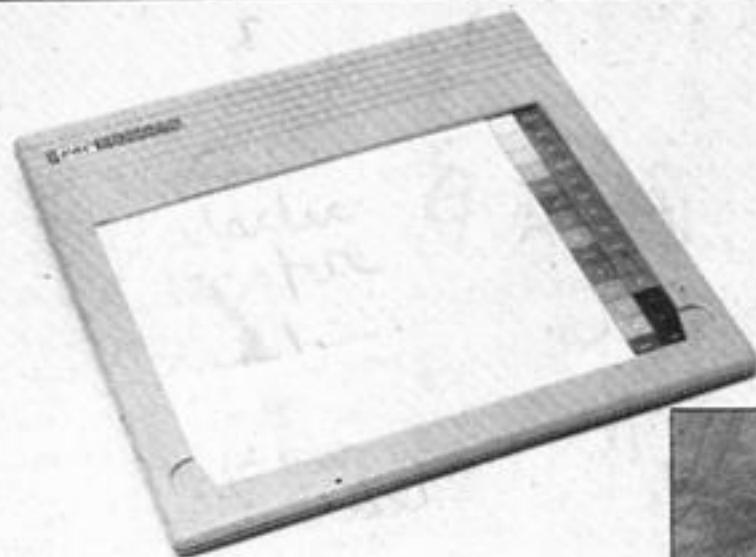
All use the standard developed by Microsoft (see HCW 64), which means software and peripherals will work on any MSX computer.

Mitsubishi, JVC and Toshiba showed their MSX models, along with peripherals.

**Mitsubishi's** ML-F110 will cost about £169 for 32K of RAM and £199 for 64K. Peripherals include a printer, cassette unit and joysticks with numeric keypad, floppy disc drive and RAM expansion to follow.

# On the way to the shops

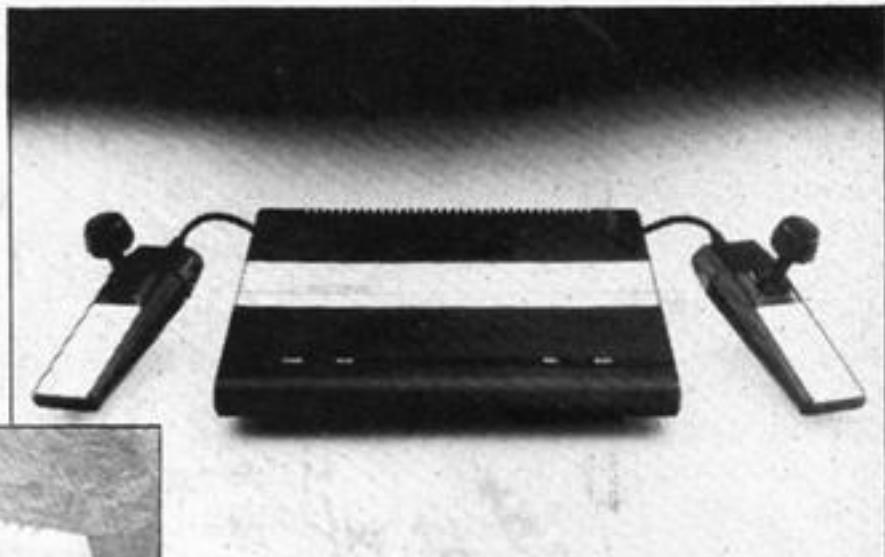
**In your High Street soon . . .**  
**Paul Liptrot reports on the**  
**Consumer Electronics Exhibition,**  
**Earls Court**



● Touchmaster from GEC — a pressure sensitive A4 pad for £99



● New 7800 games console from Atari — available in September



● The GEC Dragon Professional — priced at about £699



● The Japanese version of Mitsubishi's MSX computer — the UK model will be very similar

● Toshiba's HX-10 computer — cartridge slot is top right

**JVC** had its computer and a video disc player hooked up to the same monitor to show how graphics can be superimposed. The computer had created a keyhole shape through which a dancing girl could be seen.

The computer is expected to cost about £200 for 64K and JVC's Touchpad will be about £100. And for the future there will be a video disc controller module, but probably not until next year.

**Toshiba's** 64K HX-10 computer was also accompanied by peripherals: joystick, 3½in disc drive, dot matrix printer and miniature data recorder.

Although **Dragon** managers were reluctant to talk about their MSX plans, it is known that a sample has been shown to the high street chains and that Boots is interested.

Dragon computers use the 6809E

processor and not the Z80A or equivalent specified by the MSX standard. But Dragon already licenses Microsoft's BASIC.

**GEC**, which now has Dragon under its wing, had a flock of new products, including the Dragon Professional with 64K of RAM, one or two built-in 3½in disc drives and integral modem for about £699.

Dragon 32s are now also packed with cassette players and software in a choice of two Home Computer Learning Kits.

Due in September from GEC is Touchmaster, an A4 tablet which can be used for drawing, games and other applications. It will cost about £99 and will work with most popular home micros.

Other GEC products to come: four-colour printer — similar to the Tandy

and Oric models — thermal printer, data recorder and a remote control cartridge for home appliances and lighting. This home Secure controller — planned for other computers too — uses a range of GEC modules.

Distributors **Prism** showed five self-assembly robots called Movits, priced at £10-£35. Battery powered, they are controlled, according to model, by infra-red sensor, whistle, own memory, remote control box... or by a shout or a loud clap.

**Binatone** will soon have a cassette player designed for computers. Managing director Partap Lalvani said he had looked at launching a Binatone computer three times and was now waiting for new component developments to allow him to produce an MSX computer at £199 for 64K and allow dealers a decent margin.

partnership with Atari.

Five new Atari computer games were shown — among them *Donkey Kong Jr*, *Pengo* and *Millipede* — and **Atarisoft** has converted more Atari games to run on the Spectrum, Commodore 64, BBC model B and Electron.

**Mitsubishi**, *Hertford Place, Denham Way, Rickmansworth, Herts WD3 2BJ*  
**JVC**, *Eldonwall Trading Estate, Staples Corner, 6-8 Priestley Way, London NW2 7AF*

**Toshiba**, *Frimley Rd, Frimley, Camberley, Surrey GU16 5JJ*

**Dragon**, *Kenfig Industrial Estate, Margam, Port Talbot, W. Glamorgan*

**GEC**, *Sefton Pk, Bells Hill, Stoke Poges, Slough SL2 4HD*

**Prism**, *18/29 Mora St, City Rd, London EC1V 8BT*

**Atari**, *Railway Terrace, Slough, Berks SL2 5BZ*

**Undead***From front page*

renting video of last year.

The plot: a group of teenagers are trapped in an isolated cabin by spirits of the undead. One by one they become possessed and turn into demonic monsters.

Sounds gruesome, doesn't it? And the game is based on the film. You have to fight off the evil spirit, and avoid the other inhabitants of your cabin in a game of increasing speed. The ghouls follow you as you move, so you must be quick and use tactics. The music has been written specially for the game.

The *Evil Dead* is due for release in 10 days for the Commodore 64 and it will cost £6.99. Spectrum and BBC versions will follow. It is the first of Palace Software's range of games and other film tie-ins are in the pipeline.

Managing director Paul Stone said: "We have a lot of projects on the go at the moment, some of which are nearly finished. We haven't decided which game to launch next, and we plan to have at least a two-month gap between games."

"We're not like Virgin or Mogul, who bring out five games at a time; we don't want to flood the market. Each game we bring out will be different, for different machines and at different prices."

"We are working on a few film titles but we're not going to release a game for every film title we hold the rights to," he said. "The software market is a new area of growth for us. We have a lot planned and the prospects are very interesting."

"Palace Software was formed about 2½ years ago by Nik Powell, then the joint owner of Virgin, for whom I was marketing director," he continued. "It is part of the Palace group and Video Palace is big in video distribution. It is the largest independent video company in the country, and its biggest hits are Michael Jackson's *Thriller*, the all time best-selling video, and the new *Culture Club* video."

"We are hoping to distribute *The Evil Dead* through video outlets which don't yet stock software. We think they will be interested because of the film. The game will also be available through computer specialist shops."

"Here at Palace Software we have six in-house programmers and some freelancers. Some are specialists; one works on sound. He is a very good musician and

makes TV commercials. Another specialises in graphics."

Next time you watch a video, just think: in a short while you could be playing the game of the film!

*Palace Software, 275 Pentonville Rd, London N1*

**CBM 64 update**

Melbourne House has released ACOS+ (Advanced Cassette Operating System) with the aim of making the Commodore 64 datasette as convenient as a disc drive. ACOS+ will make available features of the CBM which were previously only available through machine code or PEEKing or POKEing.

The program has 36 BASIC commands. It also speeds up cassette operation, by setting up a directory on each tape, allowing a fast forward search and taking control of the datasette motor.

Other features are simplified sprite movement, sprite collision detection, graphics commands, interrupt driven routines, commands to use raster interrupts and a full range of sound and utility commands. You can also add further BASIC commands.

Thrown in as a bonus is a game called Zorn, which demonstrates the power and speed which the ACOS+ commands afford. The price of the package is £8.95.

*Melbourne House, Castle Yard House, Castle Yard, Richmond, Surrey TW10 6TF*

**New software house**

A new software house, Kerian, has been formed to produce games and educational software, particularly for the Spectrum.

Currently it has two educational titles on release — Spelli-Copter and Heli-Maths — and two arcade games: Buriabeast and Croakit. Three more titles are scheduled for release in the next few weeks — Turbo Chess, St. Andrews and ZX Workshop. The company plans to expand into supporting new machines when they become available.

Two members of the company personnel may be known to you: Christopher Thornton, who was a founding director of Artic and was responsible for Espionage Island and Ship of Doom, and Derek Wilson, who comes from

Arnold-Wheaton, and was involved with Beat the Clock and Weather Station.

*Kerian, 29 Gisburn Rd, Hessle, North Humberside HU13 9HZ*

**Briefly**

Sunday June 10 is a date for your diary if you live in Oxfordshire. That's when the Second South of England Personal Computer Fair will be staged, at Witney. Nearly 50 exhibitors have stands, including Memotech, British Micro, Research Machines and Longman Software. The organisers claim there will be a large range of systems and games covered. Admission charge will be £1 and the fair will run from 11 a.m. to 7 p.m. *Wood Green School, Witney, Oxfordshire*

Atarisoft has converted some of its classic games for use on Spectrum, CBM 64, BBC B and Electron. Pole Position, Ms Pac Man, Galaxian, Donkey Kong Jr, Robotron: 2084 and Dig Dug are the games — you can call the Atari Helpline (0753 24561) to find out if they're available for your particular micro.

*Atarisoft, Atari Hse, Railway Terrace, Slough, Berks SL2 5BZ*

Stell Software and Boots are running a joint promotion in May and June. Enter a spot the difference competition and you could win the complete Stell range of educational games and a Spectrum computer. Collect your entry from larger branches of Boots.

*Stell, 36 Limefield Ave, Whalley, Lancs BB6 9RJ*

Virgin has taken over the Games Centre in Oxford St, now renamed the Virgin Games Centre. Of special interest to HCW readers will be the range of software for most major micros on the first floor. Virgin states that the Game Centre is only the beginning of its expansion programme for 1984. *Virgin Games Centre, 22 Oxford St, London W1*

Psi-Spy is a new adventure game released by Postern for the 48K Spectrum. To begin this maze game you must first collect the ancient Rings of Power in an arcade sequence. Cassette and instructions, with Currah micro speech, cost £7.95.

*Postern, PO Box 2, Andoversford, Cheltenham, Glos GL54 5SW*

Due for release on May 21: *Antics*, from Bug-Byte. This is the follow-up to *The Birds and The Bees*. It's a cartoon-style maze game for the 48K Spectrum. Price: 6.95.

*Bug-Byte, Mulberry Hse, Canning Place, Liverpool L1 8JB*

**Quicksilva sold in big deal**

After months of secret talks, Quicksilva's bosses have sold their company in a seven-figure deal.

Both Quicksilva and new owners Argus Press Group say that the software company will continue to act independently.

The Argus Press Group is the publishing and communications arm of British Electric Traction (BET), one of Britain's biggest corporations.

Rod Cousens, who stays as QS managing director, says the strength of the new owners will ensure the future growth of QS.

With 70 titles, QS is one of Britain's most successful software houses. It began 3½ years ago with a few ZX80 games.

Founder Nick Lambert now has homes in Barbados and Guernsey and John Hollis, who joined him soon afterwards, lives in Guernsey. Between them they owned 80 per cent of the shares with the rest held by staff.

Mr Cousens said: "It means they can now enjoy millionaire status."

Talks with Quicksilva began eight months ago. Since then there have been many more meetings, some lasting well into the night.

Just a handful of people were in on the secret negotiations, but recently rumours have been spreading around the industry.

The Argus Press Group already had a New Technology Division and the QS purchase was a further development.

And Mr Cousens, who has 14 staff, said of the deal: "We believe that to ensure stability and growth it was a logical move in what is a volatile market."

"I'm looking forward to the continued challenge of maintaining Quicksilva's place at the front of the market."

"We have many exciting releases in the pipeline — there will be 10 launched on June 14."

● The sale includes Quicksilva Inc. which markets QS and other British software in America. This week it was running a London double-decker bus at the Chicago Consumer Electronics Show and promoting games by Virgin, New Generation and Salamander, as well as its own products.

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## Farewell to ZX Printer

Sinclair's ZX Printer has ceased production after three years as the most popular and cheapest model.

A spokesman explained: "Demand recently has been low. I think it may be in part due to the availability of interfaces for more conventional printers which people can now afford."

"We are not in the business of marketing products in low volume."

He expected the printer to remain available for several weeks, until stocks were exhausted, and the special paper would be on sale for the foreseeable future.

He said Sinclair Research had no immediate plans to market a new printer. It is likely, however, that a printer or printers are part of the company's longer-term plans.

The ZX Printer, specially designed for the ZX81 and Spectrum, first went on sale in mid-1981 at £49.95. The price went up by £10 and can now be bought for £39.95.

• The first shipments of Sinclair's £399 QL computer were due to leave last week. Due to problems in putting all the advertised features in the ROM, each will have a cartridge plugged into the back. This will later be replaced. And those who have waited for their QLs are to receive a free ribbon cable.

## BBC disc drives

Opus claims its new Super 3 Microdrive is the UK's first truly double-sided disc drive unit providing access to both sides of a disc without the need to flip it over.

Single and dual drives are compatible with most leading micros. The single disc 200K drive costs £229.95 and the price includes all leads, comprehensive user's manual, one-year guarantee and a disc cartridge. The 400K dual drive unit costs £399.

Also from Opus: a double density controller to increase the storage capacity of your disc drives by 80 per cent.

Opus claims this controller operates 80 per cent faster than single density systems, accommodates up to 248 files per side and is Acorn-compatible. Single or double density format selection is automatic, and there is a choice

of 80 or 40 track. Price £120, including connections and a comprehensive user's manual. *Opus, 158 Camberwell Rd, London SE5*

## New Bucks house

Unique is a new software house based in Buckinghamshire. John Willan, the proprietor, was formerly with the Rabbit sales team.

Unique plans to release a range of four Spectrum arcade games, costing £5.99 each, on 21 May.

The enigmatic claim from Unique is that they try to incorporate everyday items into their programs to make them more interesting and enjoyable to play.

*Unique, 16 Thorney Lane South, Iver, Bucks*

## New High St micro shops

W. H. Smith plans to expand its computer shops by opening at least 11 more and extending at least 26 Computer Know-How departments by September 1984. W. H. Smith has 355 retail shops; there are already 33 computer shops, as well as two computer shops at Heathrow airport and more than 220 Computer Know-How departments in W. H. Smith stores.

Complete systems, software, printers and other peripherals are available from W. H. Smith's computer departments. In the computer shops customers can sit at console units and use complete systems.

## The gates of hell

Go walkabout in the labyrinthines of Inferno in Richard Shepherd's new game of that name for the 48K Spectrum. Due for release on June 1, this game is loosely based around the medieval concept of Hell, according to Dante.

Make your way from the Portal of the Underworld through the nine circles of Hell to the centre and escape. You will meet interactive characters who can help or hinder you. You are warned not to be too violent as most characters are stronger than you.

The Inferno will cost £6.50 and is available by mail order.

*Richard Shepherd Software, 23-25 Elmshott Lane, Cippenham, Slough, Berks*

## Farm shop branches out

Saturday May 26 is the opening date for the dgh software centre in Ashford, Kent. Dennes, a well-established agricultural business in the East Kent area, is now branching out into computer technology.

Educational and games software will be stocked: dgh is incorporating Six Four Supplies, an established mail order software company listing over 800 titles for the CBM 64 alone. DGH intends to extend this range and have similar lists for other machines, while continuing the mail order service.

The centre will also run educational projects for students to have intensive hands-on training on specific areas of computing, including advanced BASIC and machine code for the CBM 64 and Spectrum.

*dgh software centre, 10 North St, Ashford, Kent*

## New fun games

New release from Terminal: Carpet Capers, for the 48K Spectrum, and Triple Tournament for the CBM 64.

Carpet Capers is a tactical game about deranged carpet fitters, with nine different screens. Rival carpet fitters make your life difficult and your crazy apprentice doesn't help — he drinks your tea given half a chance! Cost: £5.95.

Triple Tournament is a cassette with three games: West World, a six-gun shoot-out, Space Race, a cavern chase and Kamikaze, a shooting game. Price: £7.95.

*Terminal, Derby Hse, Derby St, Bury BL9 0NW*

## King Kong helps you read

Super Blitz is more than a game — it is helping dyslexic children overcome their disability. Commodore's program for both the VIC-20 and 64 centres around an aircraft bombing mission on skyscrapers in which King Kong is hiding.

The program's teaching value is in the movement of the plane across the screen. The child concentrates on following the movement of the aircraft from left to right, moving down a space with each pass. This is the correct tracking for reading and discourages erratic eye motions to the left. Price: £4.99.

*Commodore, 675 Ajax Ave, Slough, Berks SL1 4BG*

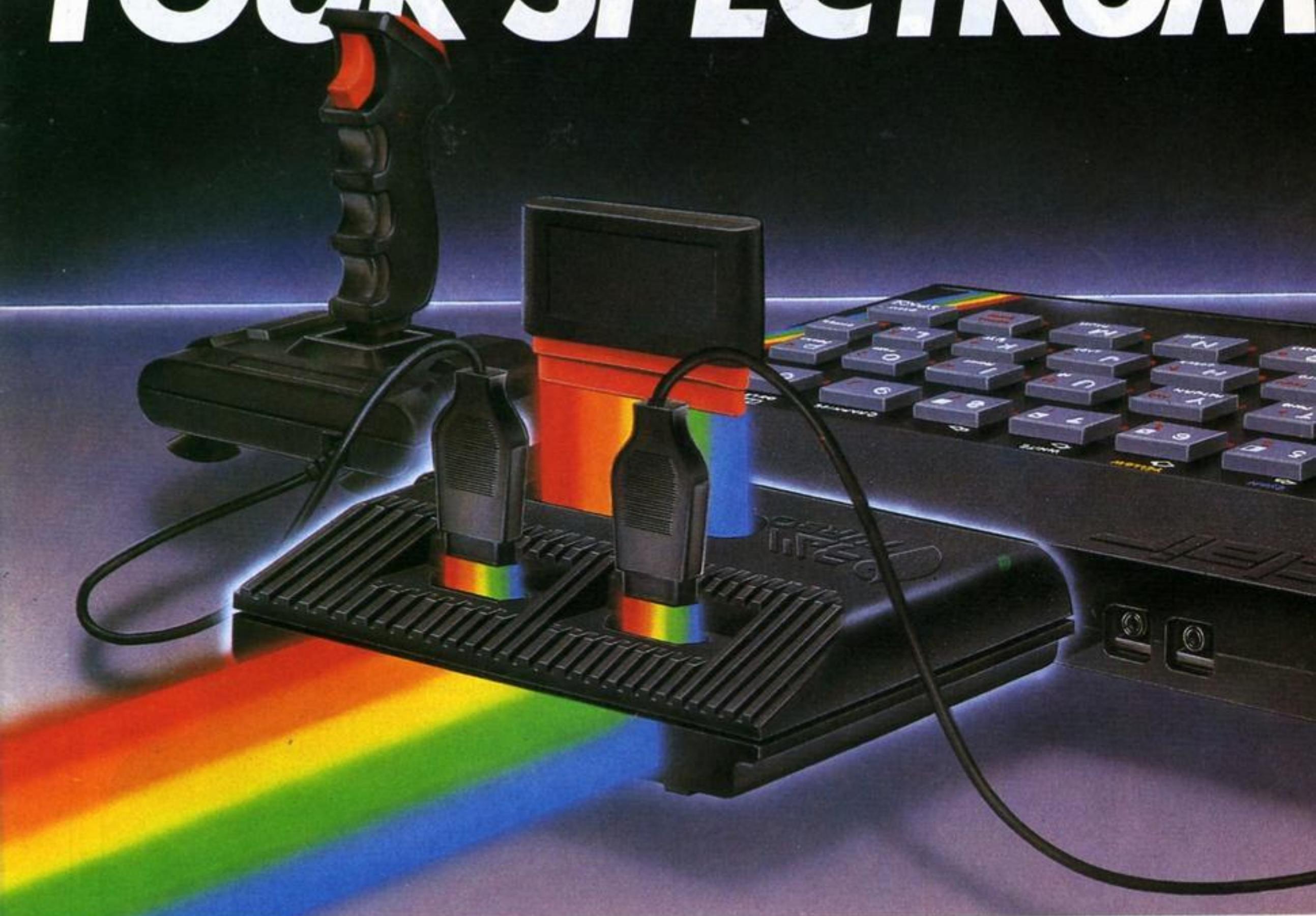
## Hulk is here!

The Incredible Hulk is coming! Games for most major computers will be on sale from June 6, costing from £7.95. In conjunction with the release of the game, Marvel Comics is publishing the comic Questprobe, price 60p, featuring the Hulk.

The Hulk is the first of a series of games from Adventure International, which will feature other Marvel characters, including Spiderman.

*Adventure International, 119 John Bright St, Birmingham.*

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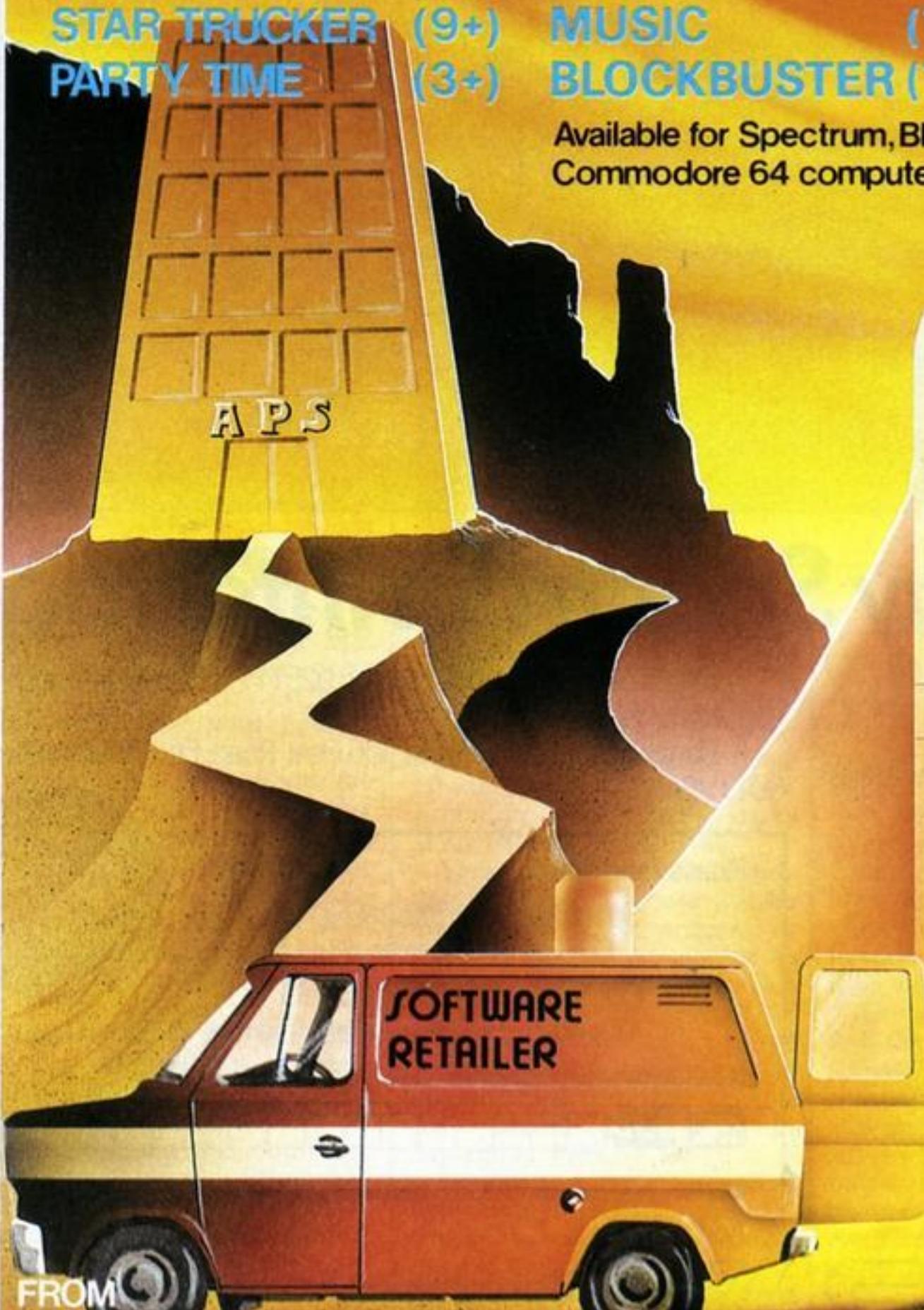
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NSB 84

# Now Europe gets games by cable

Silicon Valley strikes back. If you have been reading this column for a while, you probably remember me talking about Romox. This software house, based in Campbell, California, was the first to make a serious effort to distribute its (predominantly) entertainment software to its dealers via electronic means. The idea started out simply with the dealers needing only a specially-designed terminal. The user would select the game he or she wanted, and the dealer would then call up the communications program which would download the game from Romox's mainframe and transfer it to a programmable cartridge. If the user got tired of the game, the cartridge could be reprogrammed and re-used. The advantages to the dealer are numerous — never out of stock, no large inventories, never getting stuck with games that don't move, and so forth.

Well, the idea is apparently catching on so well that Romox is going international. At the moment, the firm is making connections with dealers in Canada, Germany, The Netherlands, Belgium, Luxembourg, Austria, Switzerland, and of course Great Britain! Obviously some Europeans like the idea, as one French firm has lined up PRO TV and The Games Network to work with major West German cable TV systems to transmit video games and educational computer software.



In case you might be wondering what the hottest selling home computing software is these days, here's a list of the top 10 in three categories:

#### Home Management/Productivity

- 1 Home Accountant, by Continental (runs on everything)
- 2 PFS:File, by Software Publishing (everything but Atari and Commodore)
- 3 Bank Street Writer, by Broderbund (Apple, Atari, Commodore, PCjr.)
- 4 PFS:Report (same as 2)
- 5 PFS:Write (ditto)
- 6 Homeword, by Sierra On-Line (Apple and Commodore)
- 7 Dollars and Sense, by Monogram (Apple, PCjr., and others)
- 8 PFS:Graph (see 2)
- 9 Multiplan, by HES (Commodore version of Microsoft's original)
- 10 Sensible Speller, by Sensible (Apple)

#### Home Education

- 1 Mastertype by Scarborough (Apple, Atari, Commodore, PCjr.)
- 2 Music Construction Set by Electronic Arts (Apple and Commodore)
- 3 Type Attack by Sirius (same as 1)
- 4 Math Blaster by Davidson (Apple, Commodore, PCjr.)
- 5 Word Attack (same as 4)
- 6 Story Machine by Spinnaker (same as 1)
- 7 Computer SAT by Harcourt, Brace, and Jovanovich (same as 1)
- 8 Kindercomp by Spinnaker (same as 1)
- 9 Facemaker (same as 8)
- 10 Snooper Troups I (same as 8)

#### Books

- 1 Compute's First Book of Commodore 64 by Compute!
- 2 Commodore 64 Programmer's Reference Guide by Howard W. Sams
- 3 Compute's First Book of Games by Compute!
- 4 Introducing IBM PCjr. by Que
- 5 Apple II/IIe User's Guide by McGraw-Hill
- 6 The Book of Apple Software by The Book Co.
- 7 How To Program Your Commodore 64 BASIC by HP Books

- 8 Commodore 64 Fun And Games by McGraw-Hill
- 9 Commodore 64 Favourite Programs Explained by Que
- 10 The Book of Atari Software by The Book Co.



In case you are interested in joining, the United States Commodore Users' Group just celebrated its first birthday. Its goal is to be the largest Commodore 64 and VIC-20 group in the world by its next anniversary. At present, it has roughly 5000 members. Membership costs \$20 per family annually. Members receive 10 issues of the club magazine *Command Performance*, a technical and programming assistance service and promotional discounts offered by manufacturers and publishers. Additionally, club members have access to over 3000 public domain programs on tape and disc. Sample issues of the magazine are available for \$1. For more information, contact USCUG at P.O. Box 2310, Roseburg, Oregon 97470.



If you are wondering how much software is available for which machines, you might be interested in the results of a recent survey which revealed that Apple is still the leader with approximately 6,400 commercial packages available. Tandy is next, with about 5,000 packages and IBM is supported by about 4,000 packages.

This study was conducted by Sofsearch of San Antonio, Texas, which feels that the advantage that Apple and CP/M programs have in the 8-bit world will not last much longer since the 16-bit market is taking off rapidly. As an example, they cite the fact that software available for the IBM has doubled in the past six months.

Hey guys, I've heard all this before. How many people do they really think are going to throw away their very expensive 8-bit systems (which are doing the job quite adequately, after all) and buy a 16-bit system that is not necessarily faster (WordStar on my 6MHz CP/M Apple runs faster than the version for my 5MHz Zenith Data Systems 16-bit machine, for instance) but is certainly more costly?

Not many, is my guess.

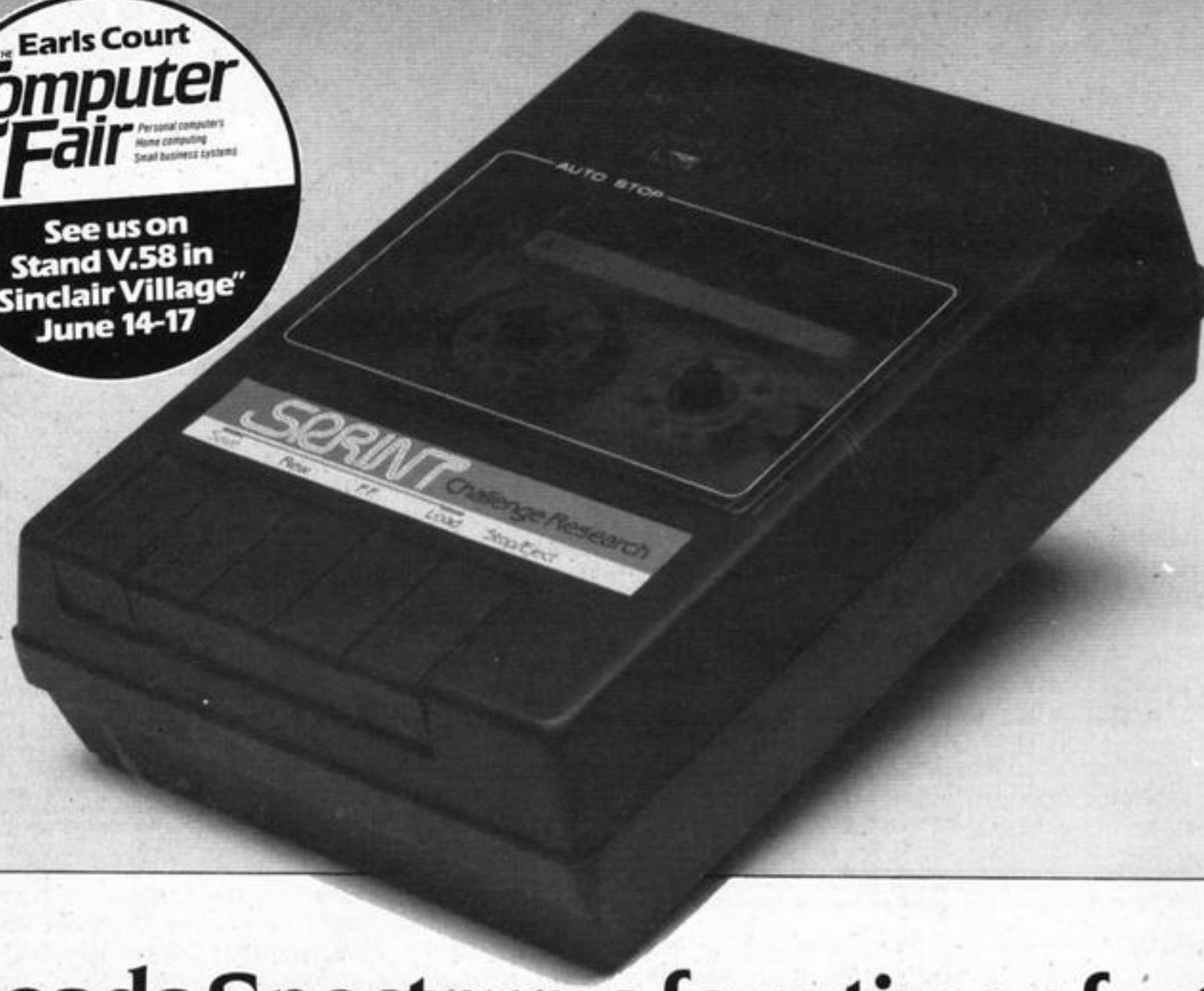


Relief from the tensions created by data entry into financial spreadsheet programs is now being offered by a company called Compu-Quote. The firm offers a 20 row by 8 column blank spreadsheet printed on erasable paper (truly top quality and truly soft software, this). The paper is green, preferred by most accountants. You are therefore free to enter data in any format you like, and can create your own labels in any language that you know. Data deletions are made simple with one stroke of the eraser. The pad is a low profile one, with an 8.5 by 11 foot print. It can easily fit into any briefcase or luggage compartment, and is safe for use on airplanes. Being lightweight, it is completely portable and requires no attached power source. Calc/Pad comes pre-punched to fit into three ring binders which will protect it from inadvertent data loss (crashes). Anyone who has had it with spreadsheets can take a couple of aspirins, as well as a sharp pencil and eraser and go to it. Write or call Compu-Quote for more details at 6814 Berquist Ave, Canoga Park, California 91307, (818) 348-3662.

That's it for this week. See you next time.

Bud Izen  
Fairfield, California

# Introducing the Challenge Sprint



**It loads Spectrums four times faster than an ordinary cassette player, uses standard cassette software, and has improved loading reliability.**

**All for just £64.95.**

The new Sprint from Challenge Research will load and save Spectrum programs at four times the speed of conventional cassette players. This even applies to standard program and games cassette software that has been pre-recorded at normal speed. All this plus improved loading reliability is available for just £64.95 inclusive of post, packing, VAT and a 12 month guarantee. The Sprint is dedicated to both the 16K and 48K Spectrum and provides an innovative but inexpensive new concept in cassette tape storage.

**Use of the Sprint is simplicity itself:**

- Retains the standard Spectrum commands and format.
- Advanced digital circuitry and signal processing improves loading reliability and eliminates volume setting.
- Simply plugs into the Spectrum port — no interface or external power unit is required. It even has its own expansion slot so that you can still use other peripherals at the same time.
- A full 48K program will load or save in 75 seconds rather than five minutes with a conventional cassette recorder.

Spend less on a Sprint. Spend more time working your Spectrum and be the envy of your friends. If you have Visa or Access cards you may phone your order to ensure faster delivery by calling Potters Bar (0707) 44063, or post the coupon below. Please allow 28 days for delivery. If you are not delighted with your Challenge Sprint simply return it within 7 days and we will refund your money in full.

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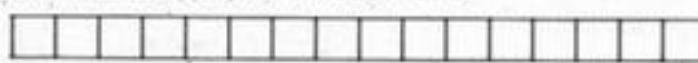
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HCW5/6

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## Signals/ Morse Code 16K ZX81 £4.95

Softchoice, 52 Platts Lane, London NW3 7NT

Morse code, invented in the 19th century, is still a widely used method of conveying information, as is semaphore. A knowledge of Morse code is compulsory for the first grades of the Radio Amateurs Examination, and signallers in all branches of the services use it.

Morse code can be transmitted either visually, by way of a lamp or wig-wag system or audibly, by radio, whistling, or tapping. Semaphore messages can be conveyed by someone waving his arms, using flags, or via a mechanical system, like two railway signal arms.

This program covers all aspects of Morse code transmission, with the sound version using the TV speakers.

Semaphore and the wig-wag system use chunky, but adequate graphic figures. Each system covers the basic code, and if you place a finger on the keyboard an audible or visual indication of the letter, number or symbol will be produced.

Although it is many years since I used Morse code seriously, I would judge the speed of the messages at about 12 words per minute. This is an excellent program.

B.B.

instructions	100%
ease of use	90%
display	100%
value for money	90%



## Tiny Touch 'N' Go Dragon 32 £9.95

Dorling Kindersley, 1-2 Henrietta St, London WC2E 9PS

A touch-typing course, nicely presented with a video-type box containing cassette, instructions and a rather smart certificate to award yourself on completing the course. According to the blurb you can achieve a speed of 40 words a minute in 24 hours, a claim I wasn't able to test as I can already touch type.

There are 58 lessons, starting with simple letter drills and advancing rapidly through lists of words to sentences and paragraphs. Each lesson must be

typed without any mistakes — though you can backspace to make corrections — within a fairly stiff time limit. After each attempt you are informed of your speed and the number of mistakes.

Numbers and symbols other than the commonest punctuation marks are not covered. The shift key is only used for question marks; all letters are typed in upper case, as is usual on the Dragon.

The program loads data files from tape at regular intervals, and I found difficulty in selecting the right volume level for this. Otherwise it worked well. M.N.

instructions	80%
ease of use	90%
display	85%
value for money	90%



## Penguin Study Software: Shakespeare 48K Spectrum £5.95 each

Penguin, 536 King's Rd, London SW10 0UH

Six titles have so far appeared in this series: Julius Caesar, Macbeth, Twelfth Night, Romeo and Juliet, Merchant of Venice and Henry IV Part I.

Each package is a complete database for the play, referring to main characters and themes, with act and scene numbers. The themes are rather subjective, but there are academically accepted themes within each play. Thus, in Macbeth, themes like water and blood are interwoven with the main plot. By specifying a character or theme, your Spectrum will search out references, suggest others and give you useful hints. If you specify both character and theme, the computer will search out text in which the two are related, inform you of the location, explain the link and suggest other areas for study.

In this way ideas for essays or exam answers can be researched without knowing the book by heart, and without having to cheat with a printed crib. You can, incidentally, limit the search to sections of the play, and act and scene references make use of Penguin's own New Penguin Shakespeare series.

Highly recommended as an aid to creative study. D.M.

instructions	100%
ease of use	100%
display	100%
value for money	100%

## Help with your homework

Use your micro to help you with your studies. Learn Shakespeare, touch typing and Morse code at home

### Maths Flash Astronaut TI-99/4A £6

Maple Leaf, from Stainless, 10 Alstone Rd, Stockport, Cheshire SK4 5AH

An original, really motivating program designed to test six- to 10-year-olds on addition and multiplication skills.

By answering 15 questions correctly, a rocket is sent into orbit. The screen is the instrument panel of a spaceship. Display includes a view of the move to a higher level. The rocket, altitude meter, galaxy converse also applies. J.W.

map and fuel supply. The questions appear in the centre; above this a timer counts down until the question is answered.

A correct response produces a smiling sun, planet or star, depending on the time taken. A wrong reply causes an exploding

planet and the correct answer is supplied.

These graphics are placed at the co-ordinates corresponding to the two numbers in the question. This means a supervising adult is able to see where there are problems, although the computer does help by continuing to ask wrongly answered questions until the correct reply is input.

Several difficulty levels are included, the response time allowed in each becoming less. If the child's performance is satisfactory the computer will

converse also applies. J.W.

instructions	90%
ease of use	95%
display	90%
value for money	100%



## Answer Back Senior Quiz 32K BBC/ Electron £10.95

Kosmos, 1 Pilgrims Cl, Harlington, Dunstable, Beds LU5 6LX

This quiz comes in a very flashy box. Colourful pictures and well thought out contents and instructions make the cassette look very promising.

This is a general knowledge quiz. There are 15 topics to choose from, including astronomy, music, science, sport and geography.

A menu is displayed giving you the choice of loading a quiz, starting or altering the present quiz. It is possible to add your own questions. The quiz begins.

To make the questions more interesting, the screen displays a lunar landscape and a robot writes out the questions. You can choose multiple choice answers, true or false, continuous answers or mixed. Up to 50 questions are stored on each subject. You have the option of being timed, passing and a re-run of the wrongly answered questions. One extra, which seems a little childish for over 12s, involves the robot. If you answer a question correctly a small spaceship moves across the screen. You have to press the spacebar to shoot it down.

This game is expensive, but I must admit it is very good. Well written and presented. D.B.

instructions	95%
ease of use	80%
display	85%
value for money	75%





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# Spectrum keyboards and games from



You could win a dk'tronics Spectrum keyboard, worth £45, in this week's competition!

Dk'tronics is offering you the chance to win one of 10 keyboards, and 40 runners-up will win two great games from dk'tronics' vast range for the Spectrum, 32K BBC, Commodore 64 and VIC-20.

Dk'tronics' new Microdrive-compatible keyboard is an updated version of its successful 52-key keyboards. An improved feature is that both the Interface 1 and computer can be fitted inside. The case is also large enough to incorporate the power supply.

Dk'tronics keyboard is simple to attach, as all connections are at the rear of the case. No fuss or hassle — all the fixing points are moulded into the base.

As well as being functional, it also looks attractive. It's black with grey keys and a separate red numeric keypad. A single entry key serves as delete and decimal point. It's just what you need for your Spectrum!

Dk'tronics specialises in arcade games and has a wide selection of games for most major computers. There's something for everyone here.

All you have to do is find all the dk'tronics games in the wordsquare. We've given you a list, so check back if you're in doubt. Hurry and complete the competition — and a dk'tronics keyboard could soon be on its way to you!

#### How to enter

Study the wordsquare and mark all the dk'tronics titles you find with a ball-point or semi-opaque felt tip pen. Complete the coupon fully and clearly — if you are a winner it will be used as a label. Send wordsquare and coupon to us.

**Important:** write the number of titles you found on the back of the envelope.

**Spectrum**  
3D Tanx Road Toad  
Centi-Bug Fruit Machine  
Dictator Maziacs  
Spawn of Evil Gold Mine  
Sound FX Meteoroids  
Distrion ZXed Toolkit  
Astron Hard Cheese  
Invaders Star Trek 3000  
Jawz Speed Duel  
Diet

Munch Man  
Apple Jam  
Trom  
Golf  
Personal Finance  
2003 A Space  
Oddity  
Slacker Puzzle  
Galactians  
Zig Zag

**32K BBC**  
Slacker Puzzle Dictator Super Fruits  
Proteans Subkiller

**Commodore 64**  
Slacker Puzzle Millie Invaders  
Alien Rescue Bug Speed Duel  
Rescue Dictator Who Dares  
3D Tanx Wins  
Maziacs

**VIC-20**  
Slacker Puzzle Woodworm  
Whacker

Send your entry to dk'tronics Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Closing date is at first post on Friday June 22, 1984.

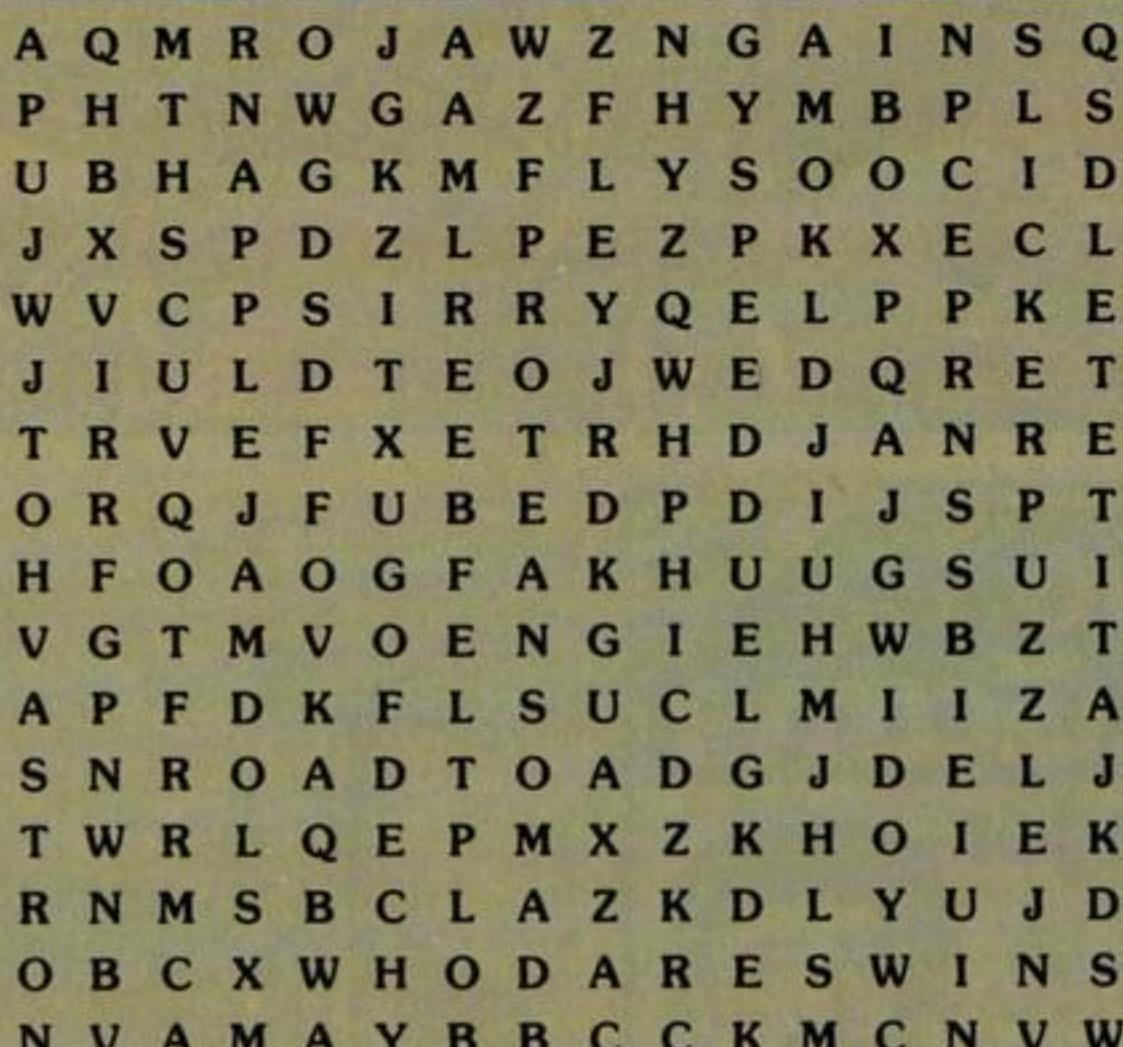
Senders of the first 10 correct entries opened at random will receive a dk'tronics Spectrum keyboard. Senders of the next 40 correct entries will receive two dk'tronics games, regardless of computer owned.

The prizes will arrive from dk'tronics within 28 days of the publication of the issue containing the results of the competition.

#### The rules

Entries will not be accepted from employees of Argus Specialist Publications, dk'tronics and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies.

The editor's decision is final and no correspondence will be entered into.



#### Competition Entry Coupon

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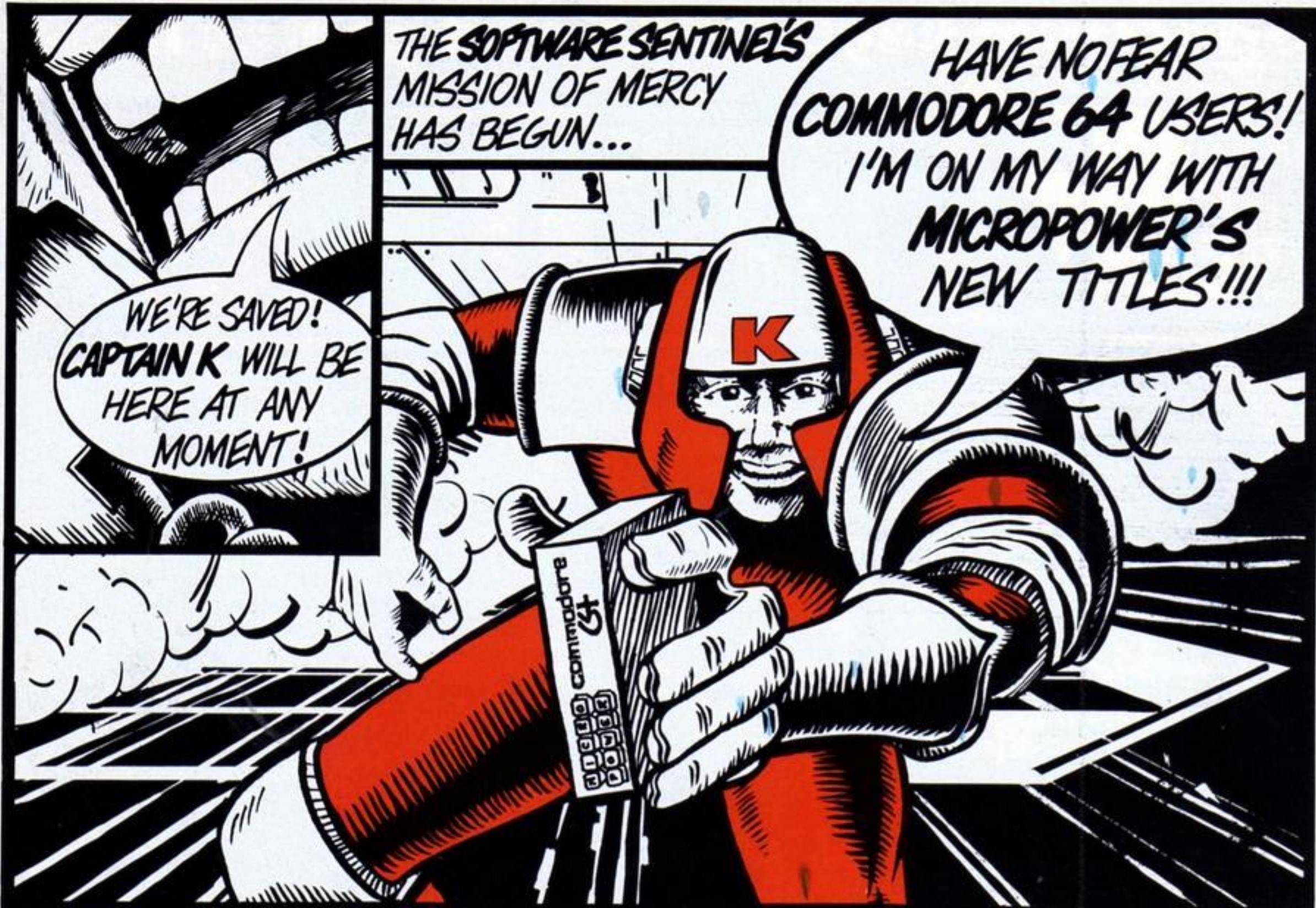
\_\_\_\_\_ post code \_\_\_\_\_

Number of titles found \_\_\_\_\_

Computer owned (Spectrum, 32K BBC, CBM 64 or  
VIC-20) \_\_\_\_\_

Complete clearly and fully — if you are a prizewinner this will act as a label. Post to dk'tronics Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Closing date: first post, Friday June 22, 1984. Follow carefully the advice in the How to Enter section, including writing the number of titles found on the back of your envelope.

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All prices quoted are inclusive of VAT, please add 50p post and packing on all orders under £10. Please allow 28 days for delivery. (Orders normally despatched within 48 hours of receipt.)

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# Toshiba: 'We'll be out in front'

The Japanese breakthrough has come with the MSX standard — and Toshiba claims to be a main contender in the fight to sell most computers.

Elspeth Joiner reports

In early autumn the MSX group of Japanese computer manufacturers will launch into the UK with standardised machines. Toshiba is convinced its own computer will be a front runner.

Toshiba's products manager, Chris Greet, reckons that come the autumn people will be stampeding into local retailers to get their hands on a Toshiba HX-10. Toshiba, together with five other firms, has built its new computer according to the MSX specification.

And if you didn't catch Home Computing Weekly's special report on the MSX assault (HCW 64) here's a quick re-cap. MSX is the brainchild of Microsoft firm. It is a specification for home computers intended to standardise machines. This is the first time such a venture has been attempted and it has met mixed reactions from public and press.

So far the only companies who have bought the MSX specification are Japanese. This means firms like Sony, Canon, Toshiba, Mitsubishi, Hitachi, Sanyo and Teletel will make a joint bid to break into the UK and European market. For years people have been waiting with baited breath for the Japanese to launch westernised computers and it looks as if they are now doing it in a big way.

Chris Greet explains why Toshiba has waited so long to produce a computer for the European market: "We felt that MSX was the chance for us to get into this market. We have been looking around for a long time for a computer to launch in the UK and this could be the ideal opportunity." He believes the advantages of MSX and the joint venture are manifold.

"The major benefit is compatibility among computers. Introducing a standard means software companies are going to have a much larger market at which to aim their software. Another advantage to software houses is that future MSX hardware will not make current software obsolete."

It all sounds hunky-dory for the



● The Toshiba HX-10

software firms involved in producing MSX-compatible programs, but what about the customers? Obviously, software bearing the MSX logo will run on any of the MSX machines — both those currently available and those yet to be developed.

And the hardware manufacturers, what do they get out of it? Hopefully, a large chunk of UK computer sales. The MSX group has so far achieved 30 per cent sales in Japan, which Chris Greet feels is quite substantial, although he agrees that MSX machines have an advantage in their own Japanese market. It might be different here.

At the moment Chris Greet thinks Toshiba's HX-10 will sell for around £270, but this may change. He said: "It really depends on the other firms; we all have different marketing plans, different ideas and different overheads.

"But I don't think price is that important. It's not the only thing to consider and obviously there will be some software which will not run on, say, the Hitachi because of the different memory size. Toshiba will probably produce more business software as that is where the 64K (which the HX-10 has) is important. Not all MSX machines will be bog standard. Some will have individual features over and above the MSX specifications, which could influence the customer."

Chris Greet says 17 firms have

signed on to the MSX dotted line to produce computers according to the standard — all are companies based in the Far East. As the deals have not yet been finalised names are still secret. It is hoped some European firms will join the MSX band but Greet says the investment required by firms involved in the MSX venture is considerable.

"The financial commitment is quite large, probably larger than most UK computer companies can afford," he said, giving some indication of the investment involved. For a start, the cost of buying a licence to produce MSX standard computers, so Mr Greet says, runs to "not much less than £1m."

To make sure its investment is not wasted, the MSX group has gone to great pains to get the co-operation of almost all major British software producers. Mr Greet explained: "The software industry in the UK is probably the most advanced in the world. We won't be using any Japanese software on the MSX machines. We are working as a group to get the software we want. Our own philosophy is that we are experts in manufacturing hardware and we will be fully supporting companies who can give us the right software."

Toshiba hasn't got any software ready for the September launch because the firm has only recently given computers to interested software houses to work on. But

Chris Greet says that all areas of software needs will be provided for, including games, educational and business. There will probably be more games than anything else initially because "there is no difficulty in obtaining good games".

In fact, Mr Greet considers software to be of such importance to the success of the HX-10's sales that he is now spending about 60 per cent of his time talking to software firms wearing his MSX hat. And having set up the MSX venture in the UK he is currently more involved with the software side of the plans. He thinks that although it will be easy for programmers to convert already successful products to run to the MSX standard, programmers will not be content to do merely that. "Because good programmers are interested in doing new things we will probably see a lot of exciting new titles in the autumn."

And if you like the look of Toshiba's HX-10 you'll be able to buy one from September. They'll be on sale in "all the usual places", which means high street retailers, but they will also be on sale in small independent retailers. According to Mr Greet, Toshiba as a company is "very strongly committed to small independent retailers", and it is the firm's intention to persuade such outlets to go into the computer marketplace. If they do it won't be for lack of retailers that you can't buy an HX-10 over the counter. Neither should it be for lack of computers, as Chris Greet guaranteed to Home Computing Weekly that "Toshiba will have computers in this country in September".

In fact, Mr Greet was brimming over with confidence at the prospect of the success of the forthcoming HX-10 and the MSX venture in the UK. "I don't think anybody will lose out, from the consumer to the manufacturer. MSX will create more of a demand in the market place and that has to be an advantage to everyone."

● For a full, in-depth report on the Toshiba HX-10 don't miss the August issue of Personal Computing Today.

# We take the lid off MSX

Software expert Simon Rockman studies the MSX and comes up with his verdict.  
An in-depth look at this future release

Ever since the early days of microcomputers there have always been problems with incompatibility. If you wanted to swap programs, your friend would have to have the same computer as you. If you upgraded your machine most of your old programs would not run on your new computer, indeed you would be lucky if they loaded. If you bought a new computer from a different manufacturer any compatibility would be a pleasant surprise.

Microsoft set out to do something about this mess and drew up a standard for manufacturers, known as MSX. Previous standards such as CP/M specified little more than the software. MSX specifies almost everything. The BASIC, operating system, disc operating system, chips, shape and wiring of all the ports, even keyboard layout must be standard.

For a standard to succeed, it must be good and the manufacturers must adhere closely to it. The most important feature is that it should be expandable. Future developments of MSX will also be standard. All upgrades must be compatible with previous machines so that software doesn't become obsolete.

Let's go through the main items of the MSX specification one by one. The BASIC is described as an advancement on Microsoft 4.5. Microsoft is quite a common BASIC, used in Commodore, Dragon, Oric, Tandy and other computers. Each manufacturer

bought slightly different versions of BASIC from Microsoft and customised it for their specific machines. If you are used to any of these machines you shouldn't have any problem getting used to MSX BASIC.

However, it lacks some of the features which newer British micros boast. Most notable is the lack of any procedure handling. The Enterprise, Beeb, QL and Amstrad all allow you to have this kind of subroutine, which can be called by name rather than by line number and pass values to the subroutines without specifying variables (this is known as parameter passing). The QL is particularly advanced in this respect and allows you to create your own keywords. Otherwise, the BASIC is more or less standard. There is a very nice full screen editor, similar to the Commodore one but with the bonus of an insert mode.

The graphics commands are quite good although they lack the increasingly popular turtle graphics. The sprite handling is very good, showing what Commodore could have done with the 64. In this respect the hardware lets the BASIC down a little.

The operating system will not affect the user. The documentation is very sparse; it hasn't been designed to support other languages in the way the BBC has, although it can easily do this. There are no built in facilities for networking or multitasking and there are limitations to interrupt processing imposed by the need

to maintain standards. The disc operating system (DOS) doesn't seem to be as well thought out as the rest of the system. There is an MSX standard disc BASIC and disc operating system but no standard for physical disc size, 3, 3.5, 5.25 and 8-inch discs all being catered for. I would prefer only one size, preferably 3 or 3.5 inch. The range of sizes will be a nasty headache for the software houses. I haven't seen any specs for the MSX DOS, but I hope it includes wildcards and defaults.

The choice of chips for MSX had provoked criticism. The supporters of MSX refer to them as "tried and tested", the opponents as "obsolete". Things move so quickly in the micro world that to make headway companies need to pour vast sums of money into research and development.

The current MSX standard is based on the Z80A central processor (as found in the Spectrum and Amstrad), running at a little over 3.5MHz (slow compared to the BBC's new Z80B at 6MHz but on a par with most other micros). The Texas Instruments TMS-9918A graphics chip is specified by the MSX standard. In the UK we get a PAL version of this chip, which has a different number and is set up for our 625 line television, but in all other respects its functions are the same. This does a similar job to the VIC chip in the VIC and 64 and the Antic chip in the Atari. It is used in the Tatung Einstein and the Memotech MTX computers. This is quite good for

graphics but cannot cope with more than 40 columns of text. Most MSX manufacturers have plans for an additional 80-column card which will be necessary for serious business use or word processing.

The 32 different sprites are the 9918's trump card. They can be used to simulate 3D effects; one sprite can hide behind another and all 32 can be on at any one time. Collision detection is not as powerful as on the 64. There is only one bit in one register to detect that sprites have collided. It is up to you to discover which one. This makes more than one collision difficult to detect.

Sound facilities are what you would expect from a home micro. The MSX uses the same sound chip as the Oric, which gives it ample scope for games-type noises but, like all home computers, it is limited when compared to a musical instrument. Yamaha, noted for musical instruments, will be launching an MSX machine with added sound facilities and a piano keyboard.

The use of standard sockets on all machines means that cartridges and printer cables can be interchanged between computers. It's a shame that the socket for the parallel printer interface is not an existing standard. The standard cartridge slot means that software houses can use economies of scale to produce a large number of cartridges.

The MSX keyboard layout has some nice features. The cluster of cursor keys makes screen editing a joy. It's so much easier to use than shift for left and non-shift for right. None of the MSX machines I have seen use a joystick, which is a pleasant feature of the Spectravideo. The QWERTY layout is American, with the quotes next to the Enter key. I found this very difficult to get used to on my wordprocessor after years of shifting 2, but to the first time user, the most likely person to buy the MSX, this will not matter.

The MSX standard is solid. There is no danger of the manufacturers being unable to supply the chips required because they are mass produced for many other applications. If the MSX invasion takes off there will be no shortage of computers.

What MSX has to offer in the future remains to be seen. MSX representatives in the UK either don't know what will happen or else are being surprisingly coy.

	approx price	standard memory size (RAM)	max. screen resolution	clock speed/processor	no. of sound channels	max. no colours	notes
MSX	£200-£300	8-1024K	256 x 192	3.5MHz Z80A	3	16	Lots of variations
Atari 800XL	£250	64K	320 x 192	1.9MHz 6502	4	256	Good value for money.
BBC B	£399	32K	640 x 256	2MHz 6502	3	8	Poor BASIC
Commodore 64	£199	64K	320 x 200	1.2MHz 6510	3	16	Very fast. Best BASIC around
Dragon 32	£175	32K	256 x 192	6809	1	8	Cheap. Poor BASIC
Electron	£199	32K	540 x 256	2MHz 6502	1	8	Well supported
Lynx 96	£299	96K	256 x 240	4MHz Z80A	1	8	Slow. Uses BBC BASIC
Oric Atmos	£170	48K	240 x 200	1.2MHz 6502A	3	8	Very slow. Limited software
Spectrum 48K	£130	48K	256 x 176	2MHz Z80A	1	8	Best software availability
VIC-20	£140	3.5K	160 x 128	1.2MHz 6502	3	16	Screen & memory memory limited
QL	£399	128K	512 x 256	7.5MHz 68008	1	8	Limited in supply
Amstrad	£230	64K	640 x 200	4MHz Z80A	3	27	Includes two Microdrives
How they compare							

Software houses are very enthusiastic about MSX. It will be a great boon to them if they can write one version of a program and then sell it for many different computers without any extra work. For the novice end-user a standard would cut down the effort and time required to build a system.

However, for the manufacturer MSX does not seem to have any great advantages. The Japanese market share is 30% split between 13 manufacturers, and the smaller ones will no doubt have trouble surviving at home. What chance will they have in the very different British market, where Sinclair alone has a share approaching 50% and the educational market is

sewn up by Acorn?

MSX machines cannot be differentiated from rival MSX machines because that would disturb the standard, so the Japanese seem to have plans to out-advertise their competitors. This will open up a whole new market and people who previously would never have touched a keyboard will be persuaded into entering the world of microcomputing. There could be a second micro-boom. There will be the need for support, maintenance, books, software and all the other ancillary services.

MSX could be a great bonus to everyone. Time will tell.



● Rear view showing expansion bus, video, audio and RF output and cassette port. Joystick sockets are on the side and cartridge slot is on the top.

## Toshiba HX-10: The facts and figures

*In our exclusive review, Simon Rockman takes the Toshiba HX-10 apart and finds out if it lives up to its claims*

It was not until I moved my Commodore 64 to make room on the desk for the Toshiba that I realised how attractive the new machine is. One line of the pop song 'Tokyo' sums it up perfectly: "transistorised... squeaky clean".

The Toshiba HX-10 is built to the usual Japanese standards of high quality mass production. No Sinclair-esque cost-cutting here.

Originally I was hostile to the MSX and I still don't think it's a good idea to have a straightjacketing standard, but I now think the standard chosen is good. Bearing in mind that the machine I had was not quite finished, it did very well to win me over.

The Toshiba is trying to break into an increasingly hectic market and will have to go far to make headway against the Spectrums and Commodore 64's of this world. Still, the Japanese have pots of money, strong marketing skills and an extensive dealer network through the large high street chains. These factors make Toshiba a force to be reckoned with, regardless of how good the computer proves to be.

### Hardware

The keyboard is very good for a low-end home micro. It is not raked as steeply as I would like, but then some of the best keyboards are totally flat. There is plenty of travel in the keystroke so the machine feels quite professional.

There is no numeric keypad but this is of little importance for a computer aimed at the home

market. Numeric keypads are great for data entry, but in the home they end up acting as joysticks and there are cursor keys if you need them. A diamond-shaped cluster of cursor keys is quite rightly a main feature of Commodore's demo for its new machines. This is one of the few improvements which can be made to a full screen editor.

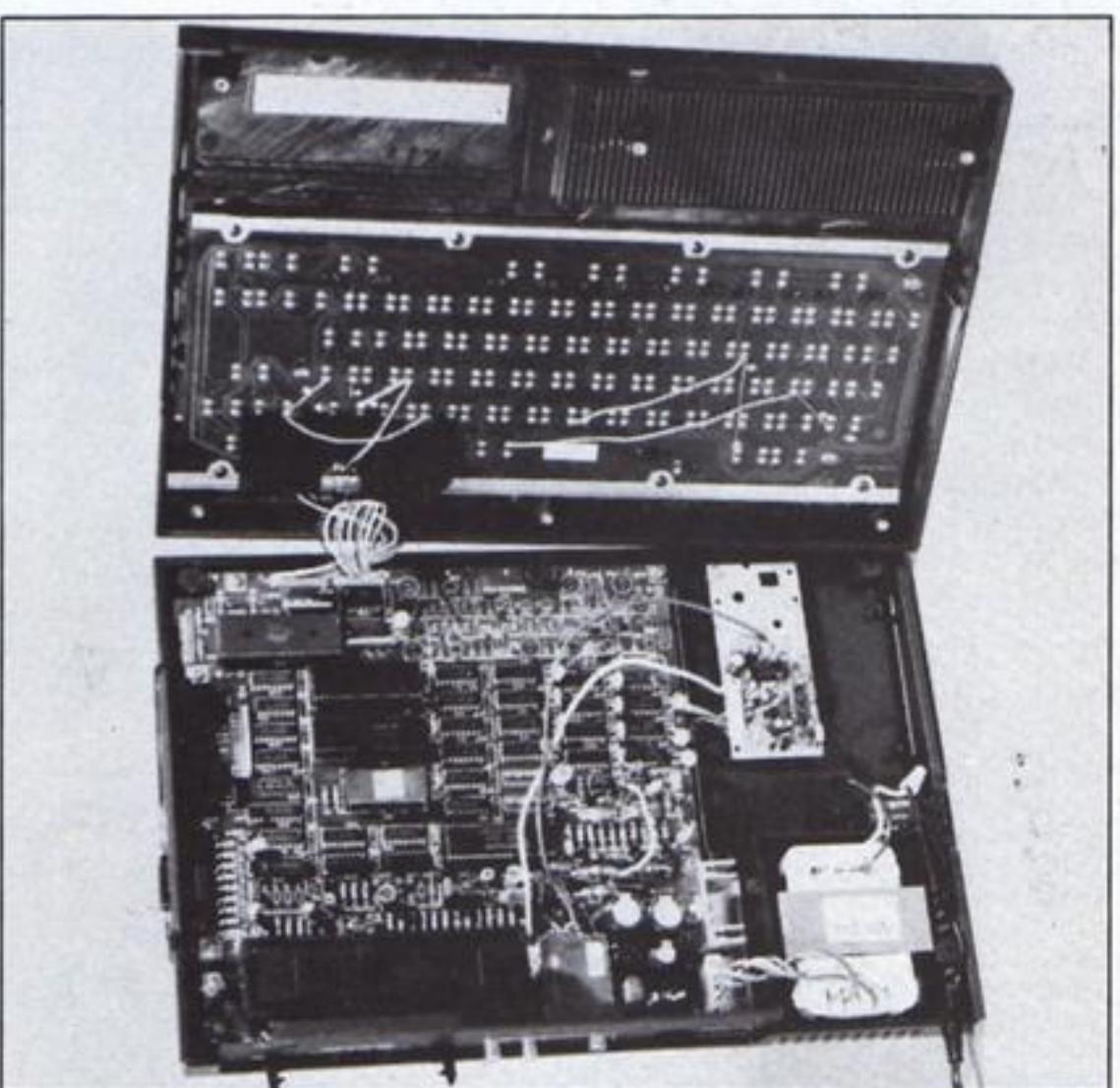
MSX specifies 10 function keys. The Toshiba's function keys are large and clearly labelled. With the screen prompts for the keys these are extremely user-friendly. All keys have auto-repeat.

The insides show that this is not a final version. There are many patches on the printed circuit board which jump tracks to fix unforeseen problems. Some of these are the result of modification to the British television format. A separate board caters for the PAL system. It's odd that although the case has been moulded to cater for this board it doesn't fit properly. This criticism is perhaps a little unfair. My machine was PAL number 4 and by the time the computers are generally available, which should be in September or October, all this should be corrected.

All the firmware is held in a 27256 (32K) EPROM. These are currently very difficult to get because of the general shortage of microelectronic components. In Japan things may be better and the computer manufacturers either make or have strong contacts with the chip manufacturers.

Moving back to the outside of the case the right-hand side houses the two joystick ports and the Amphenol parallel printer interface. I didn't try the joystick ports, which look like the standard Atari D9 socket, but I have been told that the actual wiring is different so I didn't risk any experimentation. The 14-way connector is not, as far as I know, an existing standard so I was unable to test this. It should work with a Centronics printer given an appropriate cable.

Moving round to the back there is the 50-way expansion bus which opens up the HX-10 to the rest of the MSX world. Next to this is a modulated output to a domestic television. This is tuned to the same frequency as the BBC, about channel 36. The domestic TV is intended as the main form of display; despite being a large TV and monitor manufacturer Toshiba has no immediate plans to market a monitor specifically for the HX-10. The computer comes with a cable from this socket to a tele-



● Inside the Toshiba HX-10



● Standard QWERTY keyboard includes a cluster of cursor keys

vision. Toshiba hopes to have disc drives available at launch; however, these will be fairly expensive so for the majority of people tape will be the main storage medium.

The cassette interface has a standard five-pin din plug and comes with a cable to three phono jacks. The data transfer rate to tape is 1200 baud, comparable to the Beeb or Sharp. A composite video out socket provides output to a monitor. Because sound is supposed to be produced by the television speaker a monitor will require a separate speaker. Most users will not buy a monitor so this has probably been included more for completeness than use.

Round to the left-hand side there is a firm on/off rocker switch. There is no reset button, a major omission for machine code programmers but again not a real hindrance to the game-playing user.

#### The Toshiba

HX-10 uses an extended version of Microsoft BASIC. The powerup message shows it to be MSX version 1.0. There is only 28K of RAM free to BASIC. This is very poor for a 64K machine, especially one which has 64K emblazoned all over it.

There are no keyword abbreviations other than? for PRINT. This is not as complicated as the Spectrum system of double shifts and

acceptable given the high quality of the keyboard. A keyboard shortening system as used by Commodore or Acorn would have come in handy. Variable names can be of any length but only the first two letters are significant, with reserved words disallowed from inside the name. The variable types allow for both strings and numeric variables.

There are both single and double precision floating point variables and integers, the default being floating point double precision. Strings may be up to 255 characters in length and are concatenated with the conventional + symbol. Strings may be compared using the mathematical symbols <,> and = in any combination. The usual Microsoft string handling command: LEFT\$, RIGHTS\$, MID\$, LEN, ASC, CHR\$, VAL and STR\$ are used for chopping and handling strings. There are few facilities for structured programming, no procedures or computed GOTOS. These may not be strictly BASIC but they do help you produce much nicer, easier to maintain code.

The HX-10 has comprehensive error handling commands (Table 1) with a full set of reported errors and room for the user to create his/her own error messages. Business BASIC type commands such as PRINT USING and LINE INPUT provide automatic text formatting

for screen output and input. SWAP allows you to transfer values between two variables. The commands to convert between single and double precision seem a little pointless as this process can be done with an equals sign.

There are extensive facilities for handling hexadecimal binary and octal; these are not as powerful as those for hex on the BBC and octal strikes me as being of no use at all on a machine with an 8-bit processor using a standard which is never likely to employ a 24-bit chip.

The HX-10 has facilities for loading and saving blocks of memory, enabling a rather tacky keyboard click, and detecting values from paddles, where an odd number gives the value for one paddle and an even one the value. There are two keywords for use with the joystick controls, STRING and STICK. The first one tells you if the fire button is pressed and the second which way the joystick is pointing.

Like the Amstrad, the Toshiba allows you to write basic code to be called at regular intervals (interrupt programming). The file handling does not seem to allow for discs but this is probably only a function of the disk BASIC. I just hope the disk and tape BASICS are totally compatible.

Any home computer worth its salt must have the compulsory quota of whizzes and bangs. MSX BASIC has an extensive armoury of graphics commands.

The SCREEN command allows the setting of screen mode, sprite size, key click, cassette baud rate and even printer option. The mode can either be graphics or text.

The Text mode is 40 by 24 and 32 by 24 and graphics either multi-colour or hi-res. Sprites are special characters which can easily be defined by the programmer and freely moved around the screen without affecting any of the other graphics or sprites on screen. The size can be set to 8 by 8 or 16 by 16 pixels with a further option for magnification. The function SPRITE\$ sets up the shape given the data read into a string.

The command PUT SPRITE makes moving sprites a doddle, far easier than the Commodore 64's POKEing two and sometimes three locations.

The cassette baud rate option only needs to be set for saving. When loading the HX-10 can read the tape and select the baud rate automatically. The options are 1200 or 2400 baud. The printer option tells the system what the printer is capable of in terms of graphics. This seems only to apply to Japanese versions.

The circle command provides both circles and ellipses but is slow. The draw command makes

up for the lack of turtle graphics by allowing you to specify a shape using a data string. LINE gives you a normal line drawing function for joining two points, PAINT fills an area with colour slowly but accurately.

Given all these factors it should be possible to produce some pretty neat BASIC games.

Sound on the Toshiba HX-10 is produced by the AY-3-8910, the same as is used in the Oric which has an excellent reputation for sound. The BASIC routines to drive sound make tunes easy. There is a BEEP command which rings a bell, a SOUND function which is like the Spectrum's BEEP and a PLAY command which turns a data string into a tune. Using PLAY you can specify pitch, note, octave, length, rests, tempo, volume, modulation and envelope shape. These all have extensive ranges and so it is easy to produce complex sounds.

At this early stage no documentation has been written (except in Japanese). Fortunately the manuals are being written in England so there should be none of the "cause a trouble" type comments in it. The MSX specification serves as detailed documentation and software houses can obtain copies of this and of the more technical side of the system. No doubt a flood of books will appear within days of the machine's arrival.

#### Conclusion

The Toshiba is as good (and as bad) as any other MSX machine. The Japanese price is very much lower, and the home market is protected by many import restrictions.

Will the best selling machine in Japan do well in the UK? This remains to be seen. Software is important, and will be a key factor in its success (or failure). Most of the software houses I spoke to had signed non-disclosure agreements and would only say they were looking at it and are very enthusiastic. A & F have Chucky Egg for the similar Tatung Einstein and admit it would be easy to convert this to MSX. Software Projects are rumoured to be writing Manic Miner and Jet Set Willy to conform to MSX. The only software house to be scathing about MSX is Computer Concepts, who produced the best selling Wordwise word-processor for the BBC and is looking at a variety of non-Acorn machines, none of them Japanese. This may be because MSX computers are aimed at the games market and Computer Concepts specialises in useful software.

However anything sold in every high street in Britain has to do fairly well. MSX has already won the battle of getting the machines into the shops.

Table 1

NEXT without FOR	Type Mismatch	Line buffer overflow
Syntax error	Out of string space	Field overflow
RETURN without GOSUB	String too long	Internal error
Out of DATA	String formula too complex	Bad file number
Illegal function call	Can't continue	File not found
Overflow	Undefined user function	File already open
Out of Memory	Device I/O	Input past end
Undefined line number	Verify	Bad file name
Subscript out of range	No RESUME	Direct statement in file
Redimensioned Array	RESUME without error	Sequential I/O only
Division by zero	Unprintable error	File not open
Illegal direct	Missing operand	

## SPECIAL OFFER

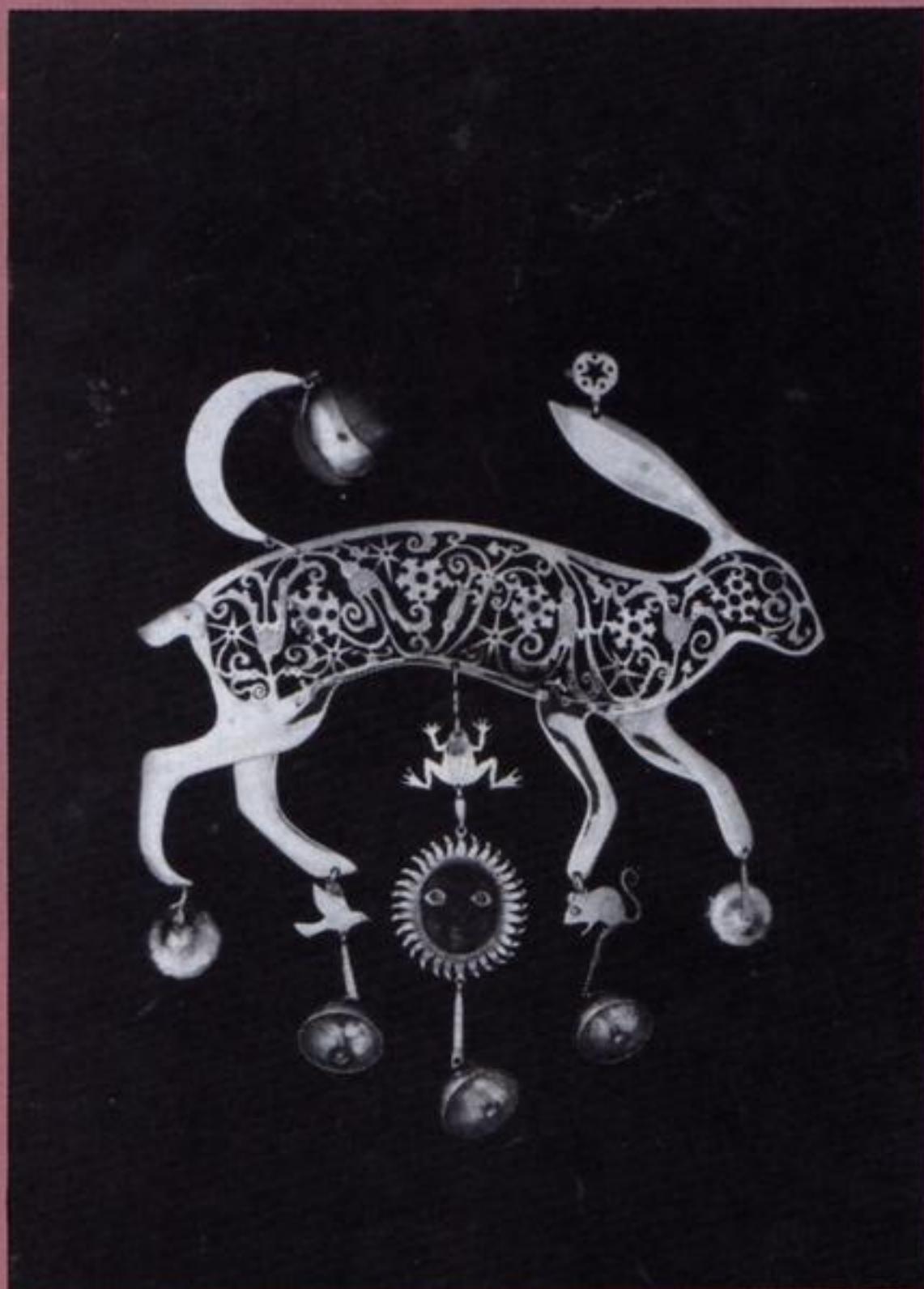
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Home Computing Weekly has come to an exclusive arrangement for its readers which also means you can be one of the first in the hunt.

The treasure is the famed Jewelled Hare of Masquerade, made of gold and set with precious stones, which started a craze back in August 1979.

Author Kit Williams published a book called *Masquerade* which contained cryptic clues to its location. It was finally discovered in 1982, buried in an earthenware jar, by a man



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called Ken Thomas.

Now Mr Thomas has sold it to a new company, Haresoft — and the hunt begins again.

But this time the clues are in two adventure game tapes. The first, called *Hareraiser Prelude*, is launched this month. Both tapes run on the Commodore 64, Spectrum, expanded VIC-20, Oric/Atmos, 32K BBC and Dragon, with the Amstrad to follow.

The cassettes will cost £8.95 each in the shops.

But to readers of Home Computing Weekly, the price of *Hareraiser Prelude* is just £7.95, by mail only and including postage and packing.

This special price is only available by collecting the voucher on this page, and in next week's Home Computing Weekly, and sending both to Haresoft with the coupon in the following week's magazine.

This offer is made through this magazine by Haresoft, to whom all enquiries should be addressed. Haresoft says your tape will arrive within five days and that it guarantees replacement of any faulty tapes.

*Hareraiser Prelude* will get you started on the hunt, but will not alone provide the solution. You will also need *Hareraiser Finale* (not part of this offer), which is due out in mid-September.

Another difference between this and the earlier hunt is that the treasure has not been buried, to avoid damaging the countryside and to give an equal chance to young people who cannot travel freely.

Instead the winner just has to pinpoint its location.

Haresoft has also taken action to prevent piracy:

- copied tapes will not contain all the data
- registration numbers of the two tapes must be held by the winner

Purchasers of the first tape, including HCW readers, who register will be offered the second by mail on the day of issue.

Haresoft says the hare was first valued by Mr Williams at £5,000 and then valued by the press at £20,000. Now the company believes its value has risen to £30,000.

The winner may take £30,000 in cash as an alternative to the hare.

- *Hareraiser Prelude* may also be ordered, at the full price of £8.95, including postage and packing, from Haresoft, P.O. Box 365, London NW1 7JD

## Alpha Blaster VIC-20 £7.95

Sumlock Electronic Services, 198 Deansgate, Manchester

Aha! Another "slice up all the aliens" game; what does this one have which is unusual and tantalising? Not a lot.

You control a space ship which scuttles from side to side across the bottom of the screen (rings a bell?) and you must shoot the descending hoards of things (yes it does). Each assault consists of three waves, each with a different mode of attack. Clear all three waves and you win the chance to do battle with another three faster waves. And so on until you've had enough.

The high spot of the game is

the decent quality graphics and the use of an enlarged screen. Well done, programmer, a vast improvement over a lot of other VIC software. The screen tended to be rather flickery, however, due to rapid refresh of the display.

I apologise for the scathing comments, but after seeing some of the VIC software available, this game is very weak. I estimate that the program is about a year out of date. Compare it to Arcadia and see what I mean.

A.W.

instructions	60%
playability	75%
graphics	75%
value for money	55%



## Chocabloc VIC-20 + 8K £6.50

Paramount, 67 Bishopton Lane, Stockton, Cleveland TS18 1PU

Occasionally you come across a program which tries to push the abilities of the VIC to a reasonable extent. This is one.

The plot is not new. You control a little man in a screen filled with blocks of ice. The eggs of nasties called Chocbeez are located under blocks. These hatch releasing other nasties whose very touch means death. The ice blocks can be crushed by pushing against them and any block with two or more free sides can be slid. You can kill the Chocbeez by sliding the blocks of

ice over them. Choc bars can be lined up for bonus points. If you clear a screen quickly you pick up a bonus score.

The game uses an expanded screen with a status window at the bottom. The blocks and figures appear to be pseudosprites built up from several characters and are well designed in multicolour mode. Movement is quite nicely done and very frantic. The sound is rather poor and very quiet.

Overall quite a decent game. Certainly worth a look if you like a frantic game.

A.W.

instructions	80%
playability	75%
graphics	80%
value for money	80%



## Fall of Rome 48K Spectrum £6.99

Argus Press Software, No. 1 Golden Sq, London W1R 3AB

This well-packaged, historical wargame takes you back to 395 AD, when Rome was in decline, but still dominated Western and Southern Europe. After a pleasing map loading screen, with a broken legionary standard, the clear instructions start in readable type (hurray!).

You must command Rome in its struggle against the barbarians, fighting on a high resolution map of Western Europe — a copy is included with the insert — and, over five 12-year turns, use the Roman resources to gain a strategic victory.

The screen shows a map of the Mediterranean, with a cross representing the province in question, the year, province name, balance of money, the state of your armed forces and present instructions. You soon learn the geography of the area, province names, budgeting (to insure that troops are maintained, economics and strategy).

Your main force, the Mobile Legion, is the basic unit upon which acquisition of strategic legions, auxiliaries and cavalry are based.

A gripping game. Not one to start late at night... as you won't want to leave it.

T.W.

instructions	90%
playability	80%
graphics	60%
value for money	95%



# Armchair action

**No need to work up a sweat — all these games require are skill and dexterity. Control legions, zap aliens and heave ice cubes from the comfort of your front room**

## Box 150 48K Spectrum £2

Cheep Games, 107 Cobden Ct, Richmond Rd, Halifax HX1 5TF

Released by Cheep Games, but not cheap and nasty. Very classy BASIC programming provides a two-dimensional version of Rubik's Cube. This ranks among the cleverest things I've seen written in a high level language.

There are three levels of difficulty, and once you set your Spectrum in motion, a complete cube jumbles itself before your eyes. Then it's up to you to get it back by manipulating the rows and columns via the keyboard. Each row and column is assigned to a pair of keys, so you can rotate in one of two directions.

It's easy to describe, but not so easy to solve. When you have finished, the number of moves and the time you took are displayed.

The colourful display is superb; a real credit to the standard facilities of the Spectrum and the programmer. The game runs quickly and smoothly. I would have liked to see a 3-D cube, but that's nit-picking.

Available only by mail order, with ZX printed inlay card and notes, if Rubik's Cube still intrigues you, then buy this. You won't be disappointed.

D.M.

instructions	95%
playability	100%
graphics	95%
value for money	100%



## Rebel Star Raiders 48K Spectrum £9.95

Red Shift, 12c Manor Rd, Stoke Newington, London N16 5SA

Two-player tactical combat with three scenarios — attack/defend Moonbase, Space-ship and Final Assault. Each player controls up to 30 characters with individual names, characteristics and weapons. The complex instruction booklet is easy to follow, but what does reference to expansion kit under LOAD mean?

The scenario is a floor plan; men can be moved by key selection in eight directions. In deploy mode, the man's name and weapon is shown and sometimes men or sites are pre-set.

Battle commences, each player moving men and using weapons in turn until their abilities are exhausted or the turn is ended. Abilities are replenished on your next turn — cheats get double turns by entering 'end-turn' code twice. You may move over your own or your opponent's men, obtaining details of weapons, armour, skill, wound endurance, plus probability of hitting target and cost.

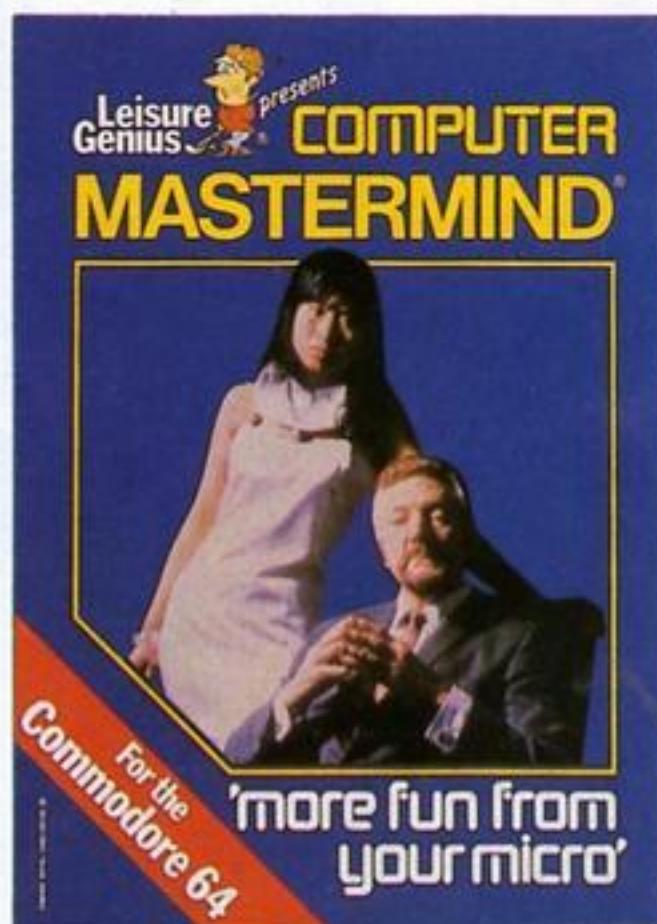
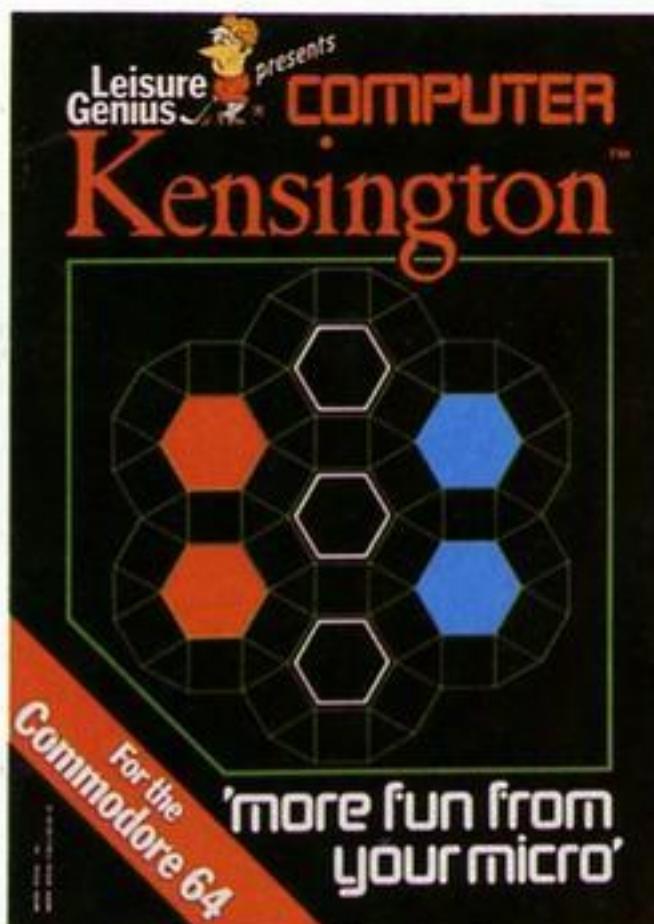
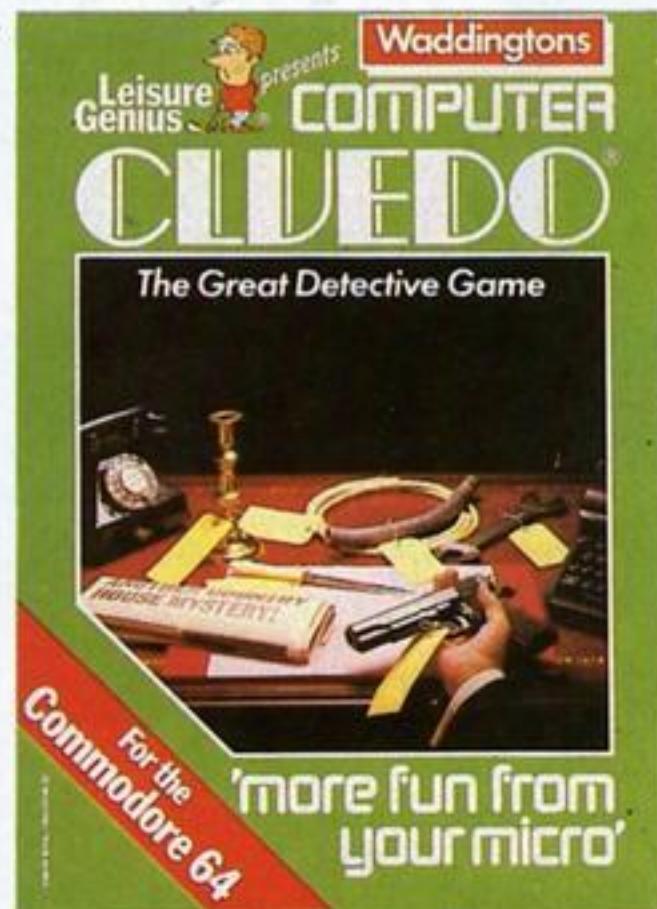
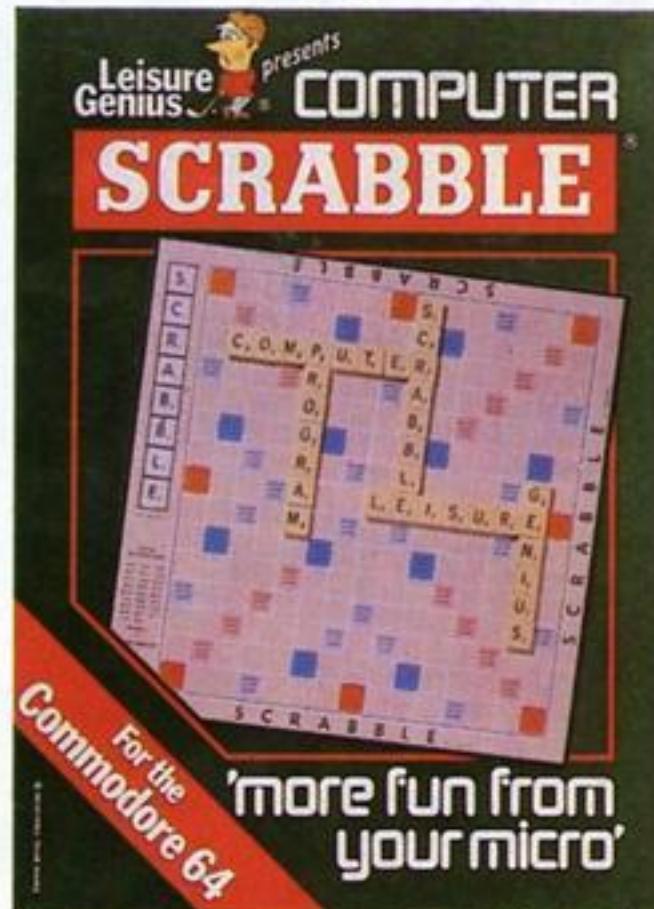
Best played with full understanding of your men's abilities, it can still be enjoyed on a novice level by deploying and bashing away. My test opponent, boasting gleefully throughout, only escaped defeat by plug-pulling. Good graphics and very absorbing.

D.C.

instructions	90%
playability	90%
graphics	90%
value for money	75%



# Ingenious...



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1 Jet Set Willy	Software Projects	Spectrum (1)
2 Jack & The Beanstalk	Thor	Spectrum (6)
3 Space Pilot	Anirog	CBM 64 (7)
4 Bullseye	Mastertronic	Spectrum (-)
5 Fighter Pilot	Digital	Spectrum (5)
6 BMX Racers	Mastertronic	CBM 64 (-)
7 Bathtime	PSS	CBM 64 (-)
8 Trashman	New Generation	Spectrum (9)
9 Gnasher	Mastertronic	Spectrum (-)
10 Spectipede	Mastertronic	Spectrum (-)

### NON-ARCADE

1 Fall of Rome	APS	Spectrum (1)
2 Kick Off	Bubble Bus	CBM 64 (-)
3 Flight Path 737	Anirog	CBM 64 (4)
4 Test Match	CRL	Spectrum (2)
5 Colossus Chess	CDS	Spectrum (-)
6 Twin Kingdom Valley	Bug Byte	CBM 64 (7)
7 Golf 64	Abrasco	CBM 64 (8)
8 Mugsy	Melbourne House	Spectrum (10)
9 Snooker	Visions	CBM 64 (-)
10 The Forest	Phipps Associates	Spectrum (-)

Compiled with the assistance of Britain's leading software distributors,  
including: Pinnacle, SDL, PCE, Websters, PCS and Software Centre.

### SPECTRUM

1 Jet Set Willy	Software Projects (1)
2 Jack & the Beanstalk	Thor (6)
3 Chequered Flag	Pson (7)
4 Bullseye	Mastertronics (-)
5 Fighter Pilot	Digital (5)
6 Pogo	Ocean (9)
7 Cricket Captain	Allanson (-)
8 Trashman	New Generation (9)
9 Gnasher	Mastertronic (-)
10 Spectipede	Mastertronic (-)

### COMMODORE 64

1 BMX Racers	Mastertronic (7)
2 Space Walk	Mastertronic (9)
3 Superpipeline	Taskset (-)
4 Horace goes Ski-ing	Melbourne House (-)
5 Harrier Attack	CBM (-)
6 Snooker	Visions (-)
7 Pyramid	Fantasy (-)
8 Ambush	Virgin (-)
9 3D Speed Duel	dk'tronics (-)
10 Black Hawk	Thorn EMI (6)

### DRAGON 32

1 Cuthbert in Space	Microdeal (10)
2 Chuckle Egg	A & F (1)
3 Dragon Chess	Oasis (-)
4 Kriegspiel	Beyond (3)
5 Eightball	Microdeal (3)
6 Skramble	Microdeal (-)
7 Hungry Horace	Melbourne House (4)
8 Sprite Magic	Knight (-)
9 Space Shuttle Simulator	Microdeal (9)
10 Sprint	Oasis (-)

Compiled by W. H. Smith and Websters. Figures in brackets are last week's positions.

### VIC-20

1 Duck Shoot	Mastertronic (3)
2 Charlot Race	Micro Antics (-)
3 Computer War	Thorn EMI (-)
4 Sub Commander	Thorn EMI (2)
5 Flight 015	Ferranti Davenport (-)
6 Tank Commander	Thorn EMI (6)
7 Crazy Kong	Interceptor Micro (7)
8 Tower of Evil	Thorn EMI (5)
9 Snooker	Visions (4)
10 Games Designer	Galactic (-)

### BBC

1 Aviator	Acornsoft (4)
2 JCB Digger	Acornsoft (8)
3 Battle Tank	Superior Software (-)
4 Over-Drive	Superior Software (10)
5 Percy Penguin	Superior Software (-)
6 Spitfire Command	Superior Software (-)
7 0 Man's Brother	MRM (5)
8 Snooker	Acornsoft (1)
9 0 Man	MRM (2)
10 3D Munchy	MRM (3)

### ZX81

1 Black Crystal	Carnell (10)
2 Krazy Kong	PSS (1)
3 Flight Simulation	Sinclair (4)
4 Chess 1K	Sinclair (7)
5 Asteroids	Quicksilva (-)
6 Space Raiders	Sinclair (8)
7 Scramble	Quicksilva (5)
8 Defenders	Quicksilva (9)
9 Invaders	Quicksilva (10)
10 Krypton Ordeal	Novus (-)
Planet Raider	Novus (-)

## Diablo TI-99/4A £8.95

Timeless, 3 Bridgend, Fauldhouse, West Lothian, Scotland EH47 9HF

The screen presentation of this game is in the form of a spaghetti junction of magnetic pieces through which a metal ball is travelling. In the centre of the screen is a blue square, and by using the direction keys or joystick this square moves sections of magnetic track left, right, up or down.

The idea is to keep the ball moving on the track without it falling off the edge. As the ball passes over a piece of track, that section of track is erased and points are scored. When a set

number of sections have been removed a wrap-around feature comes into effect, when the ball reappears on the opposite side.

The game becomes progressively harder and a tremendous degree of skill, strategy and patience are needed to complete the circuit.

This program is very well presented with good graphics and colour. Frustration could be an apt alternative title. Well worth buying. Well packaged, with printed instructions and hints on playing. Needs Extended BASIC. D.B.

instructions	95%
playability	100%
graphics	95%
value for money	95%



## Swordmaster 32K Electron £7.95

Micrograf, P.O. Box 17, Bracknell, Berks RG12 3NQ

This is a duelling game for two players. The year is 1190 AD when, in the land which is now Germany, existed a Holy Order, the Teutonic Knights. You are one of these knights.

The knights lived by very strict codes. One of these was never to lift their swords in anger against each other. But the knights did meet secretly in a valley to fight one another to the death.

The valley is displayed on the screen with two knights. There is also one knight in each corner showing respective strengths.

Using the keyboard or joysticks you can move the knights up, down, forwards and backwards, and control the movement of the swords.

This is a quality game with high class graphics. The titles for the introduction are original and the information given makes for very interesting reading. The music accompanying the titles is tuneful. A facility is provided to skip the introduction and to record the high scores on a tape.

This has been one of the most enjoyable games I have played.

M.B.

instructions	100%
playability	100%
graphics	100%
value for money	100%



## Flying Feathers Commodore 64 £6.99

Bubble Bus, 87 High St, Tonbridge, Kent TN9 1RX

The author of this game has declared war on vultures, for a change. You are a gamekeeper sat in a punt in the middle of a lake. You are armed with a shotgun and must prevent the swarms of vultures from stealing the fish. You aim the gun by moving a set of cross hairs so that it either points at or brings into line of sight the unfortunate avian of your choice. A touch of the fire button sends a cloud of shot through the air, disintegrating your victim.

You start with a fixed number of fish and the game ends when all have been stolen. Inevitably, as the game progresses, the attacks become faster and more furious. If you survive long enough, you get a bonus fish which is delivered by a family of ducks, moving across the lake making the sound of a motorboat (whatever next?).

Graphically the game is very nice with a colourful country scene. The birds are nicely animated and move convincingly. Soundwise, rather ordinary.

Not a bad game, but it depended on endurance more than skill. I soon became bored with it.

A.W.

instructions	50%
ease of use	75%
graphics	85%
value for money	80%



# The best of the bunch

Our experts are enthusiastic about this collection of software. Read their reviews to find out why

## Wrath of Kong 16K ZX81 £5.95

Softchoice, 52 Platts Lane, London NW3 7NT

Kong, a tetchy gorilla, has captured a fair maiden called Jane. Your task is to rescue her from his clutches.

With a seemingly inexhaustible supply of barrels at his disposal, Kong hurls them at you at regular intervals. The barrels then roll down inclines, hell bent younger ZX81 owners, and that on your destruction, tumbling would be a pity. B.B.

down ladders, or through hidden trapdoors. You can use a hammer for your protection, and playability broken ladders, but as yet, I haven't found out how to use the value for money ladders.

Even if you do manage to

reach Jane there is still the small matter of a boxing glove on an extendible arm to contend with.

Should you stumble across my name in the hall of fame please ignore my miserable scores, I'm out of practice, or so I keep trying to convince myself.

Within the limitations of the ZX81 graphics the author of this game has put together a very enjoyable and playable package. In my opinion a bit overpriced, which may deter some of the hell bent younger ZX81 owners, and that on your destruction, tumbling would be a pity. B.B.

instructions	100%
playability	100%
graphics	90%
value for money	65%

## Games Pak III TI-99/4A £14.95

Timeless, 3 Bridgend, Fauldhouse, West Lothian, Scotland EH47 9HF

These three games are nicely presented with full printed instructions.

Kong is a version of the popular game. Igor, the villain, has left a time bomb slowly making its way towards the maiden, so Kong also has a time limit. After each rescue the screen format changes and each display gets harder.

Bouncer is a balloon-type character which you manoeuvre with your joystick from one trampoline to another gaining points. At the same time you must avoid arrows which will puncture the bouncer.

The third game is Romeo, who is on a desert sand dune. He has to jump and catch balloons which transport him to the next dune. If you wait too long Romeo gets overheated and dies. After five screens of dunes, Romeo is deposited in shark infested water with logs floating on the surface. He must reach the bank and make his way through a cave avoiding the stalagmites to reach a maiden.

The entire package is well programmed and uses excellent colour and graphics. There is no option for keyboard input, and joysticks must be used. Good value for money. Needs Extended BASIC. D.B.

instructions	90%
playability	95%
graphics	95%
value for money	90%



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## Blackbeard's Treasure TI-99/4A £7.95

Timeless, 3 Bridgend, Fauldhouse, West Lothian, Scotland EH47 9HF

Blackbeard's Treasure is a deep sea diving game. You are in command of a five-man diving team in a boat above the treasure on the sea bed. The sea around you is infested with sharks and the treasure is guarded by two giant octopi.

By using direction keys or joysticks you jump from the boat and swim to the sea bed, avoiding sharks and octopi. You can move quite fast in the water but you slow down considerably on the sand.

Three items of treasure may be carried on each dive and these must be brought back to the boat before a second dive is made. The more treasure you return to the boat, the more difficult the game becomes, more sharks are attracted and they and the octopi move faster, so more skill is needed.

An excellent game, very well programmed and presented. Colour and graphics are brilliant. Full instructions are printed on screen before the game. Very entertaining. Needs Extended BASIC. D.B.

instructions	90%
playability	100%
graphics	100%
value for money	95%



## Classic Racing Oric 1/ Atmos 48K £7.95

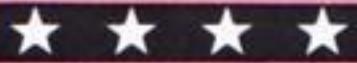
Salamander, 17 Norfolk Rd, Brighton, East Sussex BN1 3AA

This is a complex game for one to six players based on flat racing. Your rôle is as trainer in charge of a stable of 16 meetings throughout the season. In the run up to the final meetings, when the great classic races are held, you have to determine the strength of your string in order to make the most appropriate selections, giving due regard to handicapping, race distance and going. Prize money provides the spur and extra winnings can be had if you care for a flutter.

It sounds quite complicated but is easily picked up, the play being simplified by excellent screen displays and neat instructions. By the time you have completed all the preliminaries it is a welcome relief to sit back and watch the race. This is very nicely animated. It is about a year since Salamander's Donkey Derby came on the market; their software writers have learned their trade well.

Many hours of enjoyment lie in store for you budding Lesters. P.S.W.

instructions	80%
playability	85%
graphics	80%
value for money	85%



## A sporting chance

Try your strength in the decathlon or your good timing in horse racing. These are all energetic games — can you stand the pace?

### 3-D Battlestar Defence Oric 1 £6.50

Topaz, 49 Redhill, Kiveton Park, Sheffield S31 8QA

This space game is reminiscent of the final stages of Star Wars; this time you are Darth Vader in pursuit of our hero Luke. You must blast the attackers with your laser before your fuel is exhausted or you are destroyed by mines. Your gun sights must be lined up with the victims who dodge and dive out of the way.

The display is simulated 3-D and reasonably effective with many levels of skill. You have control over volume, which of course can be near deafening with the Oric, and also key selection to align your gun sights

and fire.

As you progress, the skill required increases but on the higher levels luck is probably more important than skill since there is little time to manoeuvre your sights before the mines destroy you.

I did not experience any problems loading, but no slow back-up is supplied for those less fortunate. The game operated smoothly with just the obligatory scattering of spelling mistakes. Overall an enjoyable game but perhaps too short of variations to become addictive.

P.S.W.

instructions	65%
playability	70%
graphics	75%
value for money	85%



the game; now a good sense of direction matters more than your speed of reactions.

I was rather surprised to find there is no joystick option. You use the F key to go forwards, comma to turn left and full stop to turn right. It would have been nicer to be given a choice of keys. The other notable omission is difficulty levels.

The graphics and sound effects are reasonable, and the instruction leaflet is clear. A good game, but not a classic.

M.N.

instructions	80%
playability	70%
graphics	80%
value for money	75%



## Sporting Decathlon Dragon 32 £6.50

Paramount, 67 Bishopton Lane, Stockton-on-Tees, Cleveland TS18 1PU

There is little doubt now that the shoot and blast type of arcade game is beginning to fade and become old hat. If you walk into arcades today you will see the Pentathlon game in which you have the chance to take part in several skill sports and this is a game based on that concept.

There is no room to list all the sports here but they are the usual ones involving running and throwing events, one after another.

All the games are controlled from the joystick and this is fairly easy. The only difficulty I had was the lack of response due to the program simulating the problem athletes have in speed control. In the running sports you have opponents and can gauge your performance from them, but it is very easy to run out of energy. The throwing sports are less skilful, as there is a major random element in how much strength you can give the object thrown.

Good graphics, sound and an attractive screen display. A must for all armchair athletes. D.C.

instructions	80%
playability	90%
graphics	80%
value for money	85%



# ANIROG

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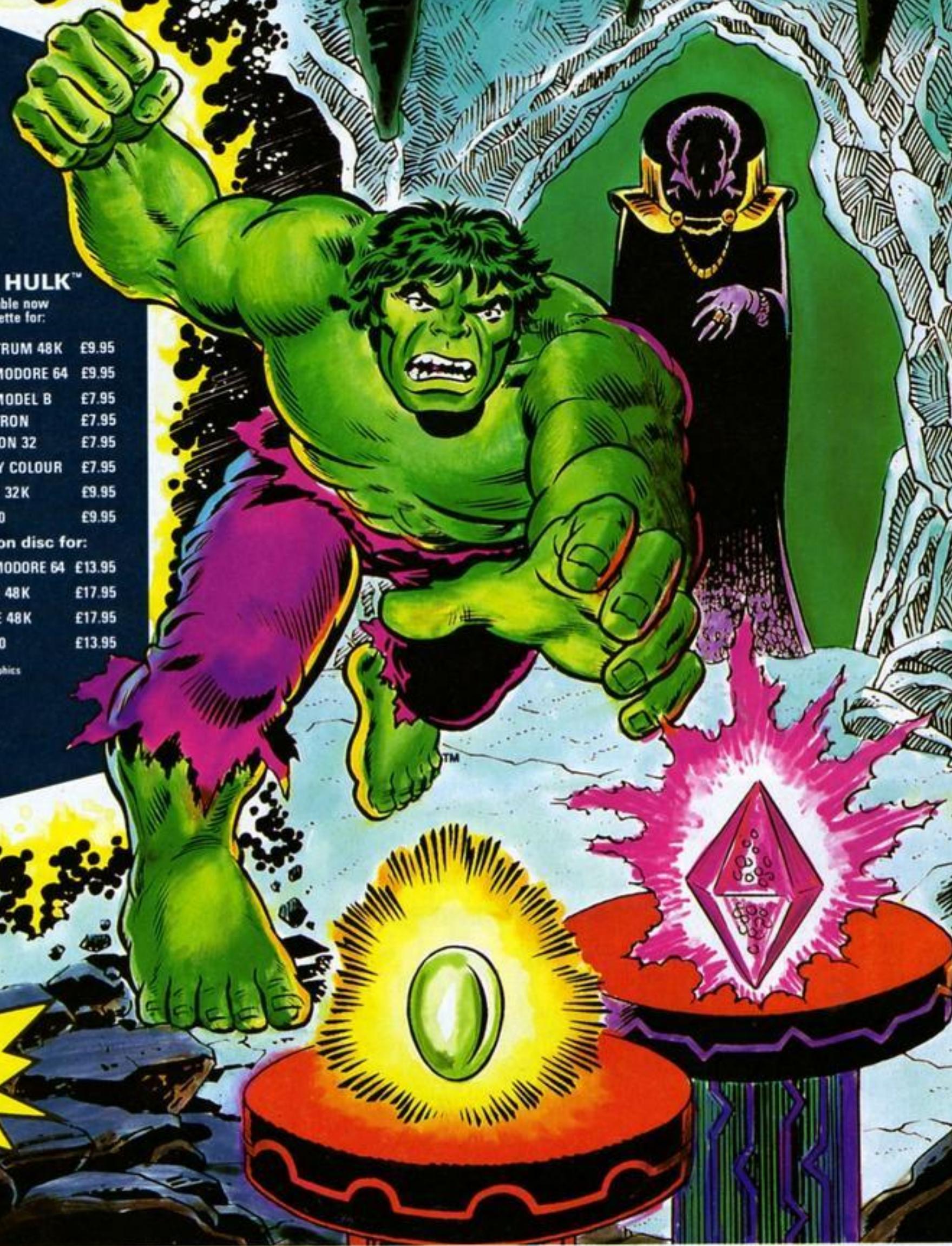
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## Codename MAT 48K Spectrum £6.95

Micromega, 230-236 Lavender Hill, London SW11 1LE

Is this the thinking man's arcade strategy game? Most certainly you need to have an exceptional memory and the ability to think quickly and the choice of being commander of planetary defence fleets or pilot, with the deployment of fleets under computer control. Twenty-one keys give control over direction, speed, firing of missiles, warp drive, defensive shields, computer tracking, displays and — one I found useful for checking the 1300+ word insert (almost as many instructions as I

had with my car) — hold!

A well-thought out and designed program, utilizing the Spectrum to its limit, which puts you into the cockpit of the battle-cruiser USS Centurian. MAT (Mission: Alien Termination) combines the tactical skills of all the planetary leaders in mankind's last hope against the final all-or-nothing Myon attack.

Similar in style to 'Timegate', this game requires much application to learn controls, strategies, stargates, keys and the meaning of the main display. Why can't I master it — or even shoot one Myon?

T.W.

instructions	50%
playability	55%
graphics	65%
value for money	70%

★ ★ ★

## Frog Shooter 48K Spectrum £6.95

Kuma, Unit 12, Horseshoe Park, Horseshoe Rd, Pangbourne, Berks RG8 7JW

I understand this program comes from Japan. All I can say is, if this is typical of the imminent invasion, UK programmers rule OK. The insert says you are a frog cornered in an alley, defending yourself from attacking objects and cannon balls. The screen is a line-drawn perspective of a topless tunnel, half of which appears to be rushing past you.

Maybe there was a misunderstanding in translation: objects flying towards you are clearly tadpoles, changing through their life cycle as you score hits.

Having resolved this identity crisis, what of the game? Controls give limited movement in the usual four directions and fire — unfortunately not simultaneously. Movement response is quite slow and key choice implies that the Japanese are double-jointed. Graphics are not wildly exciting and you are firing tennis balls if the sound is anything to go by. No loading or insert instructions, keys and scoring being given on initial screen. Might be acceptable as a magazine listing but as commercial software — forget it.

D.C.

instructions	50%
playability	40%
graphics	40%
value for money	10%

★ ★

# Defend yourself from hostile attacks!

**Aliens, tanks, ghosts, even tadpoles are all out to get you! Help is on hand from our panel of reviewers, who give you their expert advice**

## Alien Destroyer 48K Spectrum £4.95

Kuma, Unit 12, Horseshoe Park, Horseshoe Rd, Pangbourne, Berks RG8 7JW

Banks of aliens dropping from the sky, defending laser scurrying from right to left on ground. That's right, just when we thought we'd defeated them long ago (and gone on to better things), invaders are back!

Graphics are not bad although the bombs are pencil-thin and the magenta colouring difficult to see against black. Explosions are unspectacular, landing aliens only affect you if you're stupid enough to be immediately underneath and the laser reminds

me of an egg cup with cosy. No loading or insert instructions but left, right and fire, keyboard or joystick, are explained on-screen.

I liked playing this version, which may not be the recommendation it seems. That I could manage to survive, clearing several screens with a respectable score, probably means it's far too slow for the expert zapper. And sometimes, all that was needed was to stand still and press fire. But as an ego booster for those less dexterous among us or beginners, this is cheap and cheerful.

D.C.

instructions	30%
playability	60%
graphics	60%
value for money	70%

★ ★ ★

## Grid Patrol Spectrum £5.95

Lothlorien, 56A Park Lane, Stockport, Cheshire SK12 1RE

What must have started as a good idea for a very addictive game has been spoiled by three things: it is too fast, only five lives are available and it is only possible to fire in the direction (spelled 'dirction') of travel.

The scene is set by the boring black loading screen, with unimaginative white Sinclair printing upon it.

The insert promises fully redefinable keys — but the program offers no such option — though the cursor keys can be used if you pretend to have a cursor joystick!

You are in the middle of a 20 x 30 grid with shooting, moving tanks along each side and six aliens chasing you, whom you must shoot. Screen bottom shows lives left, score and time left. Names can be entered on a high score table after each game.

Apparently, there are eight screens with new aliens, but I was unable to work out which way to move the man before being zapped. By randomly pressing keys and firing continuously I scored 40! I cannot see any point in a game where there is no chance of winning.

T.W.

instructions	50%
playability	15%
graphics	25%
value for money	10%

★

## Mummy! Mummy! Spectrum £5.95

Lothlorien, 56a Park Lane, Poynton, Stockport, Cheshire SK12 1AE

An arcade game from a strategy house has to be unusual and this is, in a funny sort of way. Unlike most games, where you stay on Screen 1 until you have mastered it with lives to spare, one life lost here automatically sends you to the next screen, making practice on any one screen very difficult and totally confusing me.

A "Panic" scenario: you're an Egyptian Mummy, cruelly disinterred and seeking your tomb. You must break into the Pyramid, pass through various levels, reading 25 cartouches, avoid Badorgs, Zobs, Dibrachs and Mad Clive's ghost. I don't know what they are but they don't look nice and they must all be buried before you run out of oxygen. Why exactly a dead body needs oxygen is not explained.

Nice graphics. The controls are relatively easy, although I may not have the hang of reading cartouches — nothing happens. But persevere I shall, to my grave.

D.C.

instructions	90%
playability	80%
graphics	85%
value for money	85%

★ ★ ★ ★

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### PKD2: MUSIC MAKER by David Martin

£5.95

TI-LUDO by Roy Hollingworth  
CHARSET ONE (BOLD)

Three high-quality programs on one tape. MUSIC MAKER is a novel way to play with TI's sound. Notes are entered onto 2 musical staves and can then be edited in different ways. They can be played back with 1, 2 or 3 voices or with an echo. Many commands. Full instructions and demonstration tune included. TI-LUDO is a classic version of the classic board game. You can play your friends and/or the computer. 1 to 4 players can take part. CHARSET ONE (BOLD) is a complete ready-to-use character set which will enhance your own programs 100%.

### PKD3: RIVETS! by John Haworth

£4.95

CHARSET TWO (PICA)  
Arcade action with Rivets! You have to pick up all of the rivets left lying around by your workmates. The boss is timing you so you had better be quick. Beware the banana skins and don't run too quick as it's a long way down to the ground. 5 skill levels. 21 floors. Timer. "This is a must for all game players." CHARSET TWO (PICA) is the second off-the-shelf character set for your own games. Instructions included.

### PKD4: ESCAPE FROM MICA! by B Dhooper

£4.95

This has to be the most addictive arcade game yet for your unex-TI-99/4A! You've been captured by the Count of Mica. To secure your release you have to collect valuable items from 3 fields. These fields are guarded by a terrifying monster who eats people like you for dinner!!! The Count has given you 4 Hyperspace pills — use them wisely. This is a very entertaining game with 4 skill levels, animated running, good graphics, sound and a High-Score table. Not to be missed!

All cheques, PO's etc... to **PiKaDee Software**  
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# YOUR chance to win ...or lose your shirt



Welcome to Aintree. There are six races on today's card and you have £50 stake money.

Which runner do you fancy? Will it be Shergar, Corbier, After Eight?

The odds are shown and do make some horses more likely to win, although the favourite is not always the winner.

A race will be run, showing the horses as user-defined graphics. And at the end your winnings/losses are shown.

- As usual, we have inserted REMs in the lines above control characters as a guide. These REMs should not be typed in. Remember also to use abbreviations for the keywords — it's faster and ensures all the lines will fit.

#### How it works

140-190 work out odds, input bet

400-510 randomly move horses

1000- set up UDGs and horse

names

3000- credits

How much will you risk on the horses? Simon Eyre gives you at the races

## COMMODORE 64 PROGRAM

```
5 GOSUB2000
8 REM[CLR]
10 PRINT":POKE53280,0:POKE53281,0
20 DIMA(9,2),G(9),HA(9)
30 REM [CBM+BLK]
40 PRINT":WELCOME TO AINTREE"
45 REM[CRSR DOWN] [BLU]
50 PRINT":THERE ARE SIX RACES ON THE CARD TODAY"
55 REM[CRSR DOWN]
60 PRINT":YOU HAVE £50 TO GAMBLE ON THE GEE-GEES"
79 REM[CLR]
90 REM[GRN]
100 PRINT:PRINT":PRESS C TO CONTINUE"
110 GETA$:IFA$="C"THENGOTO120
115 GOTO110
120 S=50:FORR=1TO6:PRINT":"
125 RESTORE:FORI=1TO16:READN:NEXT
130 RN=INT(RND(1)*5)+5:ZX=1459
135 FORW=1TORN:READA$(W):NEXT
140 PRINT":THERE ARE ";RN;" RUNNERS IN RACE NO. ";R
145 REM[CRSR DOWN]
150 PRINT":THE ODDS ARE:-"
155 REM[CRSR DOWN]
160 PRINT":";FORN=1TORN:X=INT(RND(1)*19)+1
170 Y=INT(RND(1)*4)+1
180 P=X/Y:IFP-INT(P)=0THENX=P:Y=1:GOTO200
190 P=X/2:Q=Y/2:IF(P-INT(P)=0)*(Q-INT(Q)=0)THENX=P:Y=Q
200 A(N,1)=X:A(N,2)=Y
210 HA(N)=.5-Y/X*.2:IFHA(N)<.2THENHA(N)=.2
220 PRINT":NO. ";N,X;" TO ";Y;TAB(26);A$(N)
230 NEXT
240 PRINT:PRINT":YOU HAVE £";S
245 REM [CRSR DOWN]
250 INPUT":WHICH HORSE DO YOU BACK ";E
260 IF(E<1)+(E>RN)THEN250
270 INPUT":HOW MUCH DO YOU GAMBLE ";F
280 IFS-F<0THEN270
290 S=S-F
300 PRINT":"
305 REM [BLU][10 CRSR DOWN][CRSR RIGHT] 9*([CRSR DOWN][CRSR LEFT])
310 PRINT":|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||"
315 REM[CYN][HOME][8 CRSR DOWN][39 CRSR RIGHT]
320 PRINT":|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||"
330 PRINT":|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||"
335 REM[RED][HOME][10 CRSR DOWN][38 CRSR RIGHT]
340 PRINT":|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||"
345 PRINT":1|||2|||3|||4|||5|||6|||7|||8|||9";
348 REM[CYN]
350 PRINT":|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||"
355 REM[HOME][2 CRSR DOWN][CBM+BLU]
360 PRINT":YOU HAVE £";F;" ON NO. ";E;" AT";A(E,1);"/";A(E,2)
365 REM[HOME][4 CRSR DOWN]
370 PRINT":THEY'RE GOING INTO THE STALLS"
380 FORN=1TO1000:NEXT
390 FORN=1TORN
400 POKEZX,29:POKEZX+54272,10:G(N)=ZX:POKEZX+1,30:POKEZX+1+54272,9
405 ZX=ZX+40
410 NEXT
420 V=INT(INT(RND(1)*5)+1)*1000
425 REM [HOME][4 CRSR DOWN]
430 PRINT":THEY'RE UNDER STARTERS ORDERS"
440 FORN=1TOV:NEXT
445 REM [HOME][4 CRSR DOWN]
```

## COMMODORE 64 PROGRAM

```
450 PRINT"AND THEY'RE OFF ! "
460 FORN=1TO11
470 J=RND(1): IFJ<CHA(N)THEN490
480 G(N)=G(N)-1: T=PEEK(G(N)): IFT>32THEN600
490 POKEG(N),29:POKEG(N)+2,32:POKEG(N)+54272,10:POKEG(N)+1,30
495 POKEG(N)+1+54272,9
500 NEXTN
510 GOT0460
500 POKEG(N),29:POKEG(N)+2,32:POKEG(N)+54272,6:POKEG(N)+1,30
605 REM [HOME][4 CRSR DOWN]
610 PRINT"THE WINNER WAS NO.";N;" AT";A(N,1);"/";A(N,2)
612 REM [2 CRSR DOWN]
615 PRINT" ";TAB(12);A$(N)
618 REM[HOME][20 CRSR DOWN]
620 PRINT"";
630 IFEC>NTHENPRINT"YOU LOST!":GOT0670
640 W=INT(A(N,1)*F/A(N,2))
645 REM[YEL]
650 PRINT"YOU HAVE WON £";W;" GREAT EH?"
660 S=S+W+F
665 REM[CRSR DOWN]
670 PRINT"PRESS C TO CONTINUE"
675 RESTORE:FORT=1TO6:READD$:NEXT
680 GETC$:IFC$="C"THEN690
685 GOT0680
690 IFS=0THEN780
720 NEXTR
725 REM[CLR][RED]
730 PRINT"AT THE END OF A HECTIC DAYS RACING YOU HAVE £";S;" LEFT.."
735 REM[CRSR DOWN][GRN]
740 PRINT" I WISH YOU LUCK NEXT TIME"
745 REM[CRSR DOWN]
750 PRINT" ";:FORN=1TO2000:NEXT
751 REM[2 CRSR DOWN][8 CRSR RIGHT]
752 PRINT"ANOTHER GO (Y/N)"
755 GETA$:IFA$=""THEN755
760 IFA$="N"THENEND
770 GOT0120
780 PRINT" "
785 REM[RED][BLU][RED]
790 PRINT"YOU HAVE £ MONEY LEFT. TIME TO GO AND SULK."
795 REM[CRSR DOWN]
800 PRINT" BETTER LUCK NEXT TIME !"
810 GOT0750
1000 DATA32,96,240,27,15,15,24,48
1005 DATA0,0,2,228,248,240,48,24
1010 DATA SHERGAR,ALDINITI,AFTER EIGHT
1020 DATA COBIERE,GREASEPAINT,HALLO DANDY,SWEET DREAM,WHITE WINE,CAN O BEANS
2000 PRINT"PLEASE WAIT 20 SECONDS"
2010 POKE56334,PEEK(56334)AND254:POKE1,PEEK(1)AND251
2020 FORI=0TO1023:POKEI+12288,PEEK(I+53248):NEXT
2030 POKE1,PEEK(1)OR4:POKE56334,PEEK(56334)OR1
2040 FORC=0TO1:FORB=0TO7:READN:POKE12520+(8*C)+B,N:NEXTB,C
2050 POKE53272,29:RETURN
3000 REM*****HORSE GAME BY SIMON EYRE*****
3010 REM*****THANKS TO A . R HEAD FOR*****
3020 REM*****BETTING ROUTINE TAKEN ****
3030 REM*****FROM A SHARP MZ 80K GAME*****
3040 REM*****BETTING ROUTINE TAKEN ****
3050 REM*****BETTING ROUTINE TAKEN ****
3060 REM*****BETTING ROUTINE TAKEN ****
3070 REM*****BETTING ROUTINE TAKEN ****
3080 REM*****BETTING ROUTINE TAKEN ****
```

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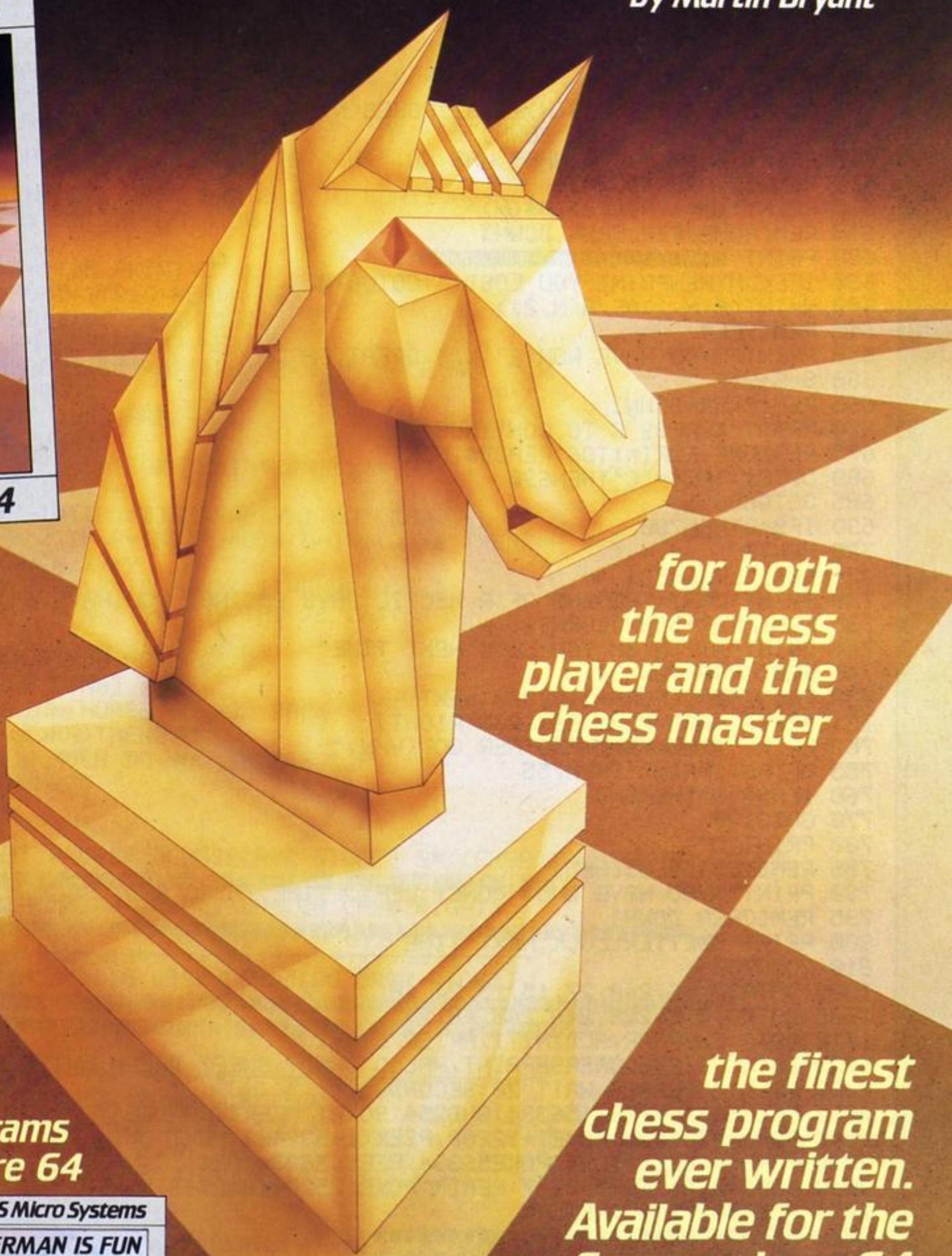
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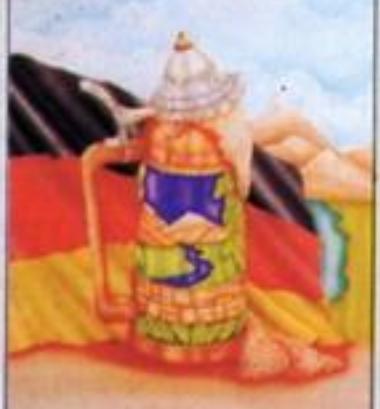
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- Programs must always be sent on cassette. Listings are helpful, but not necessary. Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.
- Articles on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in HCW. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas, possibly with programming examples. We will convert any sketched illustrations into finished artwork.
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Chart compiled from sales figures through CBS Distribution for April 1984.

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and leading multiple retailers and specialist computer stores.



# Announcement from Ikon Computer Products

The Hobbit floppy tape system reviewed in this issue has been superceded by our new machine called the ULTRA DRIVE.

The ULTRA DRIVE is approximately twice as fast as the Hobbit and costs only £79.95 including V.A.T. and all interfaces and operating system.

The version for the BBC computer has a filing system which closely mirrors the standard disc system yet leaves PAGE at E00!

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If you are not delighted with the Ultra Drive and return it within ten days the purchase price will be refunded.

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TI-99/4A

LANTERN

TI-99/4A

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Arcade action in TI-BASIC! Race with Egor thru four castles and 24 different sheets. Superb graphics and great fun.



**Daddie's Hot Rod (BASIC) £5.95**  
Drive through sheep fields, woods, over rivers and avoid all obstacles, then pick up hitch-hikers down perilously twisting roads. HCW gave five stars.

If you haven't yet seen our range of games and utilities for the TI-99/4A, then perhaps it's about time you joined in the fun!

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## SPECIAL OFFER FOR TI-99/4A OWNERS

Full free 16K Basic fully graphic adventure, buy any of the games listed below from us mail order before 12th June and we will give you a free game (TI99/4A).

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Our latest full action packed arcade style game, defend your space base, with 9 yes 9 keys controlling the action you will be very busy firing your guided missiles, lazer cannon, mobile lazer and driving your space buggy as you struggle to repair your defensive force field. Even the aliens are animated in this super game. Special features! Select your own keys, 5 skill levels from trainee to virtually impossible, hall of fame and brilliant sound.

**ADVENTUREMANIA** (TI Basic no command module needed) £5.95  
The number 1 fully graphic and text adventure. 30 locations, discover the ultimate quest. H.C.W. gave five stars. A real challenge taking hours, days, weeks, even months to complete. See review in July edition of Software Today.

**MANIA** (TI Basic no command module needed) £5.95  
Fully graphic and text adventure, can you escape to the corridors of time. H.C.W. gave 5 stars and said I would certainly buy Mania. See review in August edition of Software Today.

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XI XII I  
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**Timeless Software**

### Extended Basic Software

**Blackbeards Treasure** by Millers Graphics Cat. No. T.4 £7.95  
Your 5 man diving team has found the lost treasure of Blackbeard the pirate. Unfortunately it is at the bottom of a shark infested sea and is protected by two giant octopuses.  
"... one of the rare games you just don't get tired of playing... a program that will make owners of other home computers wish they had purchased a TI 99/4A instead." 99'er May 1983.

**Battle Over Titan** by Millers Graphics Cat. No. T.2 £7.95  
Your short range scanner has located Torg craft that are out to destroy your outpost on Titan. How long can you stave off the Torgs attack? High speed, fast action game with full colour high resolution graphics.

For a full list of programs for BASIC, Ex. BASIC and Mini-Memory inc. Books, send S.A.E. to:-

**TIMELESS SOFTWARE**  
3 Bridgend, Fauldhouse, West Lothian, Scotland EH47 9HF.

## Character Generator TI-99/4A £3.25

Maiden, 6 Seymours, Harlow, Essex CM19 5NG

As every programmer knows, designing graphics and then calculating hexadecimal codes can be a tedious business, particularly those for sprites in Extended BASIC. This utility takes all the hard work out of that task. In fact, it's a pleasure to use.

You have a choice of two modes. The first defines one character on an 8 x 8 grid, whilst the second defines up to four characters on a 16 x 16 grid. The hexadecimal codes for each character are displayed beneath the grid, although you can input the coded string yourself and see the resulting character drawn automatically.

The most imaginative feature is the incorporation of short keywords which will not only be obeyed directly when entered, but may be formatted into short 'programs', saving a lot of typing and time.

Once the characters are on the grids, they may be manipulated by commands to invert, mirror or rotate. Up to 10 may also be kept in a temporary 'store' until you want to make a more permanent record. These can then be saved in files on tape and re-loaded when required. Needs Extended BASIC.

J.W.

instructions	95%
ease of use	90%
display	80%
value for money	100%



become clearer. But I still don't understand why the author shows a byte with the least significant bit (0) as the leftmost bit, while giving it the value 128, the most significant bit of the byte. Nevertheless the program does work, and it is worthwhile persisting until you get the hang of it. Of particular interest to many will be the ability to create quite large sprites, which, with a curious mixture of pixels and characters can be a maximum of 40 x 64 pixels.

A bit overpriced, maybe, but a valuable tool for ZX81 programmers, in either BASIC or machine code.

B.B.

instructions	90%
ease of use	75%
display	60%
value for money	80%



## BetaBase 32K BBC £25

Clares Micro Supplies, 98 Middlewich Rd, Rudheath, Northwich, Cheshire CW9 7DS

Until recently there has been a dearth of good disc database programs for this machine but now the DFS is in good supply and understood, they are being produced by the dozen.

This is a very capable database, flexible enough for most uses, yet simple for the beginner. The use of menus makes life easy and the well-written 54-page handbook complements the program.

BetaBase supports up to 200 fields in each record with maximum length of 2048 bytes. The number of records depends upon the specification you give and the capacity of your disc; a blank disc gives 1K less than its capacity for storage.

Search facilities are comprehensive with eight types, although the use of wild cards is not fully supported. Features of the system are 'Redefine' and 'Transfer' routines, offering powerful manipulation of data. The print routines are quite comprehensive but not easy to use and there is no flexibility of screen display.

Overall I think anyone could use this database with excellent results, especially as there is a demo file.

D.C.

instructions	90%
ease of use	95%
graphics	N/A
value for money	90%



# Make the most of your micro

Reviews of five new utility programs from our team of experts

## Multisound Synthesiser

Romik, 272 Argyll Ave, Slough, Berks SL1 4HE

This utility gives you complete control over the sound features of the Commodore 64 without resorting to POKEing about in the sound chip.

You can set up the note envelope, that is, its attack, decay, sustain and release characteristics by means of a control screen. The levels set are indicated on the control screen by bar charts giving you a note profile.

You can then switch to a keyboard screen. This converts the four rows of keys on the 64 to a three-octave keyboard arranged as a two keyboard organ. For example, Q is lower C and 2 is C sharp. You can shift the whole keyboard up or down

octaves to use the full range of the 64. The keyboard is shown on the screen and as you play a note this is indicated on the screen's keyboard. I found the keyboard layout made it easy for a one-fingered pianist to pick out a tune.

In addition to these screens there is a special effects screen. This gives you control over all the other sound features of the 64 such as ring modulation, envelope sweeping, notch cut filtering etc. This means you can concentrate on the creative side instead of laboriously writing programs to achieve these effects.

L.C.

instructions	70%
ease of use	70%
display	80%
value for money	70%



## Fastload + 16K ZX81 £7.50

Softchoice, 52 Platts Lane, London NW3 7NT

By far the most common medium used for data storage among home computer enthusiasts is magnetic tape, in particular in cassette form.

The major drawback of using cassettes is speed, or rather lack of it. Data, in the form of bits, is put on to and taken off tape at the rate of so many bits per second. This bit transfer rate is called the baud rate, and is a controlling factor in the length of time a program takes to save or load. Multiplying the baud rate by a factor of four or six will speed up the save and load capabilities, and that is what this program allows you to do.

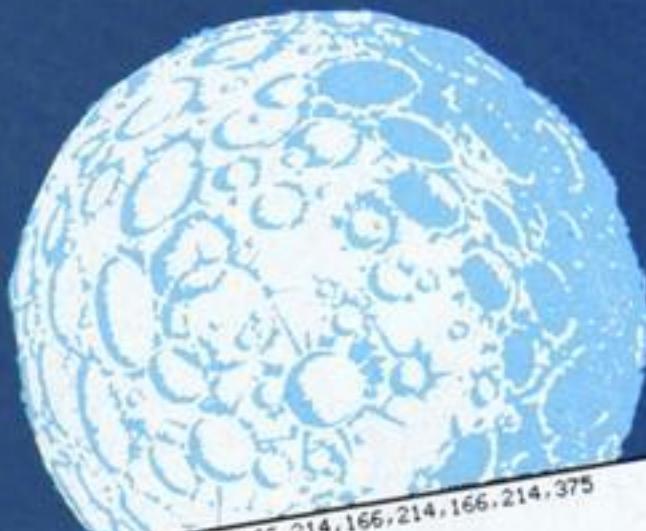
Not every cassette recorder will allow the six times factor, but your everyday recorder should give you the four times option. The package comes complete with a very comprehensive, if repetitive, booklet, which must be studied carefully.

Although I cannot vouch for the six times option, as my recorder was not compatible, the four times option certainly speeded up saving and loading time. In other words, it works.

B.B.

instructions	100%
ease of use	95%
graphics	N/A
value for money	65%





220 DATA200,500,214,1750,214,165,214,165,214,166,214,375  
290 R=7790: FU=2000: TI\$="000000"  
300 PRINT "J"  
310 B=8141  
315 DF=INT(RND(1)\*10)+1  
317 IF DF<=2 THEN G2=5  
318 IF DF>=8 THEN G2=4  
319 IF DF<8 AND DF>2 THEN G2=6  
320 H=3  
321 IF G2=6 THEN H=5  
322 POKEB,G2=POKEB+C,H  
330 POKEB+22,7:POKEB+44,7:POKEB+22+C,5:POKEB+44+C,5  
340 SD=INT(RND(1)\*4)+1  
350 IF SD=1 THEN CO=22  
352 IF SD=2 THEN CO=-22  
355 IF SD=3 THEN CO=0  
360 B+C0  
370 IF B=8141 THEN B=8-22  
380 IF B=7855 THEN B=8+22  
420 POKER,0:POKER+C,7  
430 XC=RND(1)  
440 IF XC>.9 THEN 00SUB5000  
441 POKES4,130  
445 KE=PEEK(197)  
450 IF KE=197 THEN POKER,32:R=A-22:00SUB1000:POKER,0:POKER+C,  
455 IF KE=26 THEN POKER,32:R=A+22:00SUB1000:POKER,0:POKER+C,  
470 IF KE=41 THEN 00SUB2000  
500 IF KE=41 THEN 00SUB2000  
510 IF KE=32 THEN 00SUB3000  
511 IF PEEK(R+1)>32 AND PEEK(R+1)<1 THEN 00T01000  
512 IFFU 300 THEN FOR YT=1 TO 10:POKES1,200+YT:NEXT YT:POKES1,0  
513 IFFU 300 THEN POKES185,32  
523 IF RND(1)<.82 THEN 00SUB5000  
524 POKER,32  
525 SYS688  
526 POKER,0:POKER+C,7  
527 FU=FU-LE:IFFU<0 THEN 00T040000  
530 IF TI\$="000200" THEN POKES4,0:00SUB2000  
640 00T0316

**Combat evil with good in this  
wrestle with black forces in  
another galaxy. Who dares  
wins in two games written by  
Adam Lowe**

```

10035 PRINT "I"
10040 PRINT "HARD LUCK"
10050 PRINT "DISCORE="" ;SC
10060 PRINT "FUEL="" ;FU
10070 PRINT "TIME="" ;TI
10071 PRINT "ANOTHER GAME?"
10080 GETA$ 
10090 IF A$="Y" THEN FOR I=0 TO 23: SYS 6800: POKE $1, 200-I: NEXT: POKE $1, 0: POKE 36869, 255: T=0
: I=0: GOTO 01
10100 IF A$="N" THEN POKE 36879, 27: PRINT "I" END
10110 GOTO 10080
20000 PRINT "I"
20010 FOR P=1 TO 3: FORT=128*P: STEP 1: POKE $1, T: NEXT: NEXT: POKE $1, 0
20011 PRINT "BONUS STAGE KM"
20015 FOR I=1 TO 2000: NEXT
20020 PRINT "BONUS="; INT(FU/2)
20025 FOR I=1 TO 2000: NEXT
20030 PRINT "DISCORE="" ;SC
20031 FOR I=1 TO 2000: NEXT
20032 PRINT "DISCORE="" ;SC
20035 FOR I=SCTOSC+INT(FU/2): STEP 4: PRINT "DISCORE="" ;I: POKE $1, 210
20036 POKE $1, 160: NEXT: POKE $1, 0
20037 SC=SC+INT(FU/2)
20040 FOR I=1 TO 2000: NEXT
20050 PRINT "HAPPY BIRTHDAY HRPING, NOW"
20055 FOR I=1 TO 1000: NEXT
20060 PRINT "I"
20065 POKE 36879, 9
20070 POKE 36864, 34: POKE 36865, 60: POKE 36866, 128: POKE 36867, 174-22*2
20080 FOR K=22 TO 65: STEP -1: POKE 36864, 124+K: POKE 36865, 38+K: POKE 36866, 150-K: POKE 36867,
74-K*2
20081 SF=INT(RND(1)*8)+1
20082 POKE 36879, 8+SF
20090 POKE 36876, 211+(K*2): POKE $4, 255-(K*2): NEXT: TI$="000000": POKE 36879, 8: POKE
9
20100 POKE $1, 0: LE=LE+1
20110 GOTO 0640
40000 SD=255: POKE $4, 0: ZC=R
40010 PRINT "YOU RAN OUT OF FUEL!!"
40020 POKE ZC, 0: POKE ZC+C, 2
40030 ZC=ZC+23
40040 IF PEEK(ZC)>32 THEN A=ZC: POKE ZC-23, 32: GOTO 010000
40050 POKE $1, SD: POKE $1, 0: FOR I=1 TO 200: NEXT: POKE ZC-23, 32: SD=SD-10: GOTO 040020
50000 JK=R+21
50020 FOR I=JK TO R: STEP -1
50025 IF PEEK(I)>0 AND PEEK(I)<31 THEN POKE I, PEEK(I): I=I-1: GOTO 050025
50030 IF PEEK(I)=0 THEN POKE I, 32: POKE $1, 0: POKE $4, 0: I=0: T=0: GOTO 010000
50040 POKE I, 0: POKE I+C, 1
50050 KE=PEEK(197)
50060 IF KE=9 THEN POKER, 32: R=R-22: GOSUB 1000: POKER, 0: POKER+C, 7
50070 IF KE=26 THEN POKER, 32: R=R+22: GOSUB 1000: POKER, 0: POKER+C, 7
50071 FG=FG+1
50075 POKE $1, 200+FG
50080 POKE I, 32: NEXT
50090 FG=0: POKE $1, 0: RETURN

```

### Listing for Scramble 2

```
0 DIMPI$(0):FORI=1TO8:P$(I)=""999 MOLESOFT":NEXT
1 POKE36879,8:POKE36869,255:POKE36878,15:SC=0
2 C=30720:S1=36876:S4=36877
3 PRINT"3":INPUT#3,1:IFSC=0THEN
4 PRINT"LEVEL(1-50)":LE:IFLE<10LE>50THEN
5 IFPU$="Y":THENGOTO15
6 IFPU$="N":THENGOTO290
7 GOTO4
8 R=7790:FU=2000
15 FORT=1TO130
20 POKE36878,15
30 RERDA READB
50 POKE$1,A:FORI=1TO8:NEXT:POKE$1,0:NEXT
60 DATA145,166,145,166,145,166,172,875,200,875,193,166,189,166,181,166,214,875,2
80,500
70 DATA193,166,189,166,181,166,214,875,200,500,193,166,189,166,193,166,181,875,1
45,375
80 DATA145,125
90 DATA172,875,200,875,193,166,189,166,181,166,214,875,200,500
100 DATA193,166,189,166,181,166,214,875,200,500,193,166,189,166,193,166,181,875,
145,375
110 DATA145,125
120 DATA157,750,157,187,193,187,189,187,181,187,172,187,172,166,181,166,189,166,
181,375
130 DATA157,125,167,500,145,375,145,125,157,750,157,187,193,187,189,187,181,187,
172,187
140 DATA200,555,181,125,181,875,145,375,145,125,157,750,157,187,193,187,189,187,
181,187
150 DATA172,187,172,166,181,166,189,166,181,375,157,125,167,500,200,375,200,125,
214,375
160 DATA209,125,206,375,200,125,193,375,185,125,181,375,172,125,200,1312
170 DATA145,166,145,166,145,166,172,875,200,875,193,166,189,166,181,166,214,875,
200,500
180 DATA193,166,189,166,181,166,214,875,200,500,193,166,189,166,193,166,181,875,
145,875
190 DATA145,125
200 DATA172,875,200,875,193,166,189,166,181,166,214,875,200,500,193,166,189,166,193,166,181,875
210 DATA193,166,189,166,181,166,214,875,200,500,193,166,189,166,193,166,181,875
```

```

POKE8185+C,5
1000 IFAC7680THEHRA=7680
1001 IFAD8142THEHRA=8142
1005 IFPEEK(A+1)C32THEHNGOT010000
1010 RETURN
2000 Z=A+1
2010 FORI=1TO20
2015 POKEZ,32
2020 Z=Z+1
2030 ZV=PEEK(Z)
2040 IFZV=4THENSC=SC+30:GOT02890
2050 IFZV=3THENSC=SC+30:GOT02890
2060 IFZV=5THENFU=FU+50:GOT02890
2070 IFZV=6THENPOKEZ,6:POKEZ+C,5:GOT02890
2075 IFZV=7THENPOKEZ,7:POKEZ+C,5:GOT02890
2080 POKEZ,1:POKEZ+C,2:POKEZ+C,7
2085 POKE1,200-I:NEXT
2090 POKEZ,32
2091 IFZV=60RZV=7THENPOKE1,8:FU=FU-20:RETURN
0
2092 FU=FU-20:RETURN
3000 Z=A+22
3010 FORI=8T08
3020 POKEZ,32
3030 Z=Z+22
3035 ZV=PEEK(Z)
3040 IFZV=4THENSC=SC+28:POKEZ,9:POKEZ+C,2:POKEZ,11:POKEZ+C,7:POKEZ,32:GOT04000
3050 IFZV=3THENSC=SC+38:POKEZ,9:POKEZ+C,2:POKEZ,11:POKEZ+C,7:POKEZ,32:GOT04000
3060 IFZV=5THENFU=FU+58:POKEZ,9:POKEZ+C,2:POKEZ,11:POKEZ+C,7:POKEZ,32:GOT04000
3070 IFZV=6THENPOKEZ,6:POKEZ+C,5:GOT04000
3075 IFZV=7THENPOKEZ,7:POKEZ+C,5:GOT04000
3080 POKEZ,2:POKEZ+C,7
3085 POKE1,148-(I#2)
3090 NEXT
4000 IFZV=60RZV=7THENPOKE1,8:FU=FU-25:RETURN
4001 FORJ=9T012:POKEZ,J:POKEZ+C,7:FORV=1T010:NEXT:NEXT:POKEZ,32:POKE1,8:POKE4,
0
4002 RETURN
5000 RX=INT(RND(1)*176)+1
5010 IF7680+RX<7782THENRETURN
5020 POKE7680+RX,3:POKE7680+RX+C,4:RETURN
10000 POKE1,8:POKE4,8:FORI=1T010
10010 FORT=9T012
10011 POKE4,152-(T#2)
10020 POKER,T:POKER+22,T:POKER+1,T:POKER-21,T:POKER+23,T
10021 POKER+C,7:POKER+22+C,7:POKER-22+C,7:POKER+I+C,7:POKER-21+C,7:POKER+23+C,7
10022 POKER-22+C,7
10024 NEXT:NEXT:POKE4,8:FORI=1T023:SYS680:NEXT:PRINT"J":POKE36869,240
10025 S$=STR$(SC):POKE198,8
10026 R=0:FORI=1T08:IFSC>VAL(LEFT$(P$(I),6))THEHR=I:I=8
10027 NEXT:IFR=8THENFORT=1T0509:NEXT:GOT010031
10028 PRINT"YOU ARE ONE OF THE TOP":8 PLAYERS."
10029 PRINT"ENTER YOUR NAME":POKE19,1:INPUT"#####":I#POKE19,0:IFLEN(I#)>10T
HEN10028
10030 FORI=7T0RSTEP-1:P$(I+1)=P$(I):NEXT:P$(R)=S$+" "+I#
10031 PRINT"ALL OF FRAME":PRINTSPC(5)-----"-----#"
10032 FORI=1T08:PRINT"##":I;"##":P$(I):NEXT:PRINT"#####HIT ANY KEY"
10033 POKE198,0:WAIT198,1:POKE198,0:FORI=8T023:SYS680:POKE1,200+I:NEXT:POKE1,0
10034 PRINT"J"

```

## Scramble

For this program you need 3K of expansion.

You are the pilot of a MKII scramble ship. Your mission is to bomb fuel dumps and missiles. Soar over the alien landscape, swoop low, avoiding spacemines and accelerate away from the Sproing. This is an alien which has evil intentions and will annihilate you. You are defenceless against the Sproing and can only dodge it and keep out of its way.

You have a problem with fuel supply and your levels drop rapidly, so fast reactions and quick work are necessary. Try to hit the mark each time you drop bombs and fire your laser, as this also uses up fuel you can ill afford to lose.

You will hear a warning siren when you are low on fuel and a fuel dump character appears in the bottom right-hand corner of the screen. If your supply is completely exhausted you will plummet to the ground and explode.

## Listing for Scramble 1

```

1 PRINT"3"
2 POKE36879,8
3 POKE52,28:POKE56,28
18 FORI=7168T07679:POKE1,PEEK(I+25600):NEXT
28 FORI=7168T07271:READA:POKE1,R:NEXT
38 DATA192,96,114,255,255,114,96,192
48 DATA8,0,8,85,85,8,0,8
58 DATA8,0,36,24,68,68,68,24
68 DATA36,66,165,24,24,165,66,36
78 DATA24,24,24,68,68,126,182,66
88 DATA126,255,195,223,199,223,255,126
98 DATA32,32,68,114,126,255,255,255
108 DATA255,255,255,255,255,255,255,255
118 DATA24,126,219,126,24,36,66,195
128 DATA36,72,42,152,61,72,186,145
138 DATA28,64,8,26,64,84,8,16
148 DATA8,0,34,2,8,0,16,128
158 DATA8,0,0,16,16,4,8,8
428 FORI=688T0725:READA:POKE1,R:NEXT
438 DATA169,19,32,218,255,169,29,32,218,255,169,13,32,218,255,238,60,3,173,68,3
448 DATA169,29,32,218,255,169,28,32,218,255,169,13,32,218,255,238,60,3,173,68,3
458 DATA281,21,288,231,96
455 POKE36879,8
456 PRINT" "
457 POKE36865,168
458 PRINT"J"
478 PRINT"NNN"      SCRAMBLE"
488 PRINT"NNN"      -3V-
498 PRINT"NNN"      380#RDH#000#LOWE#000#"
508 PRINT"NNN"      380#RDALAR#0#"
518 PRINT"NNN"      FOR MOLESOF"
528 PRINT"NNN"      HIT ANY KEY"
521 FORI=168T038STEP-.2:POKE36865,1:NEXT
525 G=0
538 FORI=7972T07972+22
548 POKEI+38728,0
558 GETRS:IFRS=0:"THEN680
555 NEXT
568 IF0=0THEN0=1:GOT0538
578 IF0=1THEN0=0:GOT0538
600 PRINT"J":POKE36869,255      POSSIBLE GAINING FUEL AND POINTS"
610 PRINT"JTRAVEL RS FAR RS"
620 PRINT"KEY CONTROL"
630 PRINT"SW=UP":PRINT"SW=DOWN":PRINT"SW=FIRE LASER":PRINT"SW=SPACE=DROP BOMB"
635 PRINT"SW=ARE OF THE SPRO1NOW"
640 PRINT"LOAD NEXT PART"
650 NEW

```

# Battle beyond the stars

Use these keys to control your scramble ship: W up, X down, S fire laser, space bar drop bomb.

Type in and save the first program on tape. Type in the second program and save it immediately after the first.

## How it works

### Program 1

1-160 set up variables, screen display  
 165 scroll screen up  
 170-360 set up graphics  
 365-601 screen display  
 610-630 prompt to load part 2

### Program 2

1-7 set up some variables, screen display  
 8-10 play Yellow Rose of Texas  
 11-15 scroll screen in and out  
 99-140 set up more variables  
 150-200 set up screen  
 210-560 main part of the game  
 570-770 move aliens  
 780-820 move landscape  
 830-980 move aliens  
 981-1020 blow up ship  
 1021-1095 switch off sound, print score, ask if player wants another go  
 2000-2090 hi-score table  
 10000-10020 screen display called from line 7

Load and run the first program. Press SHIFT and RUN/STOP when the NOW LOAD THE NEXT PART prompt appears. The second program will load and run.

The first program defines the graphics and machine code.

## How it works

### Main program

0-8 variables  
 15-20 play music  
 60-220 data for music  
 300-440 print landscape  
 450-510 keyboard control  
 511-523 GOSUB various subroutines  
 524-640 erase ship, scroll screen to left, reprint ship  
 1000-1010 screen detection for ship  
 2000-2092 fire laser  
 3000-4002 drop bomb  
 5000-5020 print random mine  
 10000-10110 death routine, hi-score table  
 20000-20110 bonus stage  
 40000-40050 out of fuel — crash ship  
 50000-50090 print and save the Sproing

## Defender

You also need 3K expansion for this game.

You are in control of a spaceship. Alien ships threaten you and your men, who are at the bottom of the screen. Zap the aliens and save your men!

The game ends when 10 of your men are captured, you are shot by an alien or an alien ship crashes into you.

To control your spaceship, press: W up, X down, S fire laser, D forward, A stop movement.

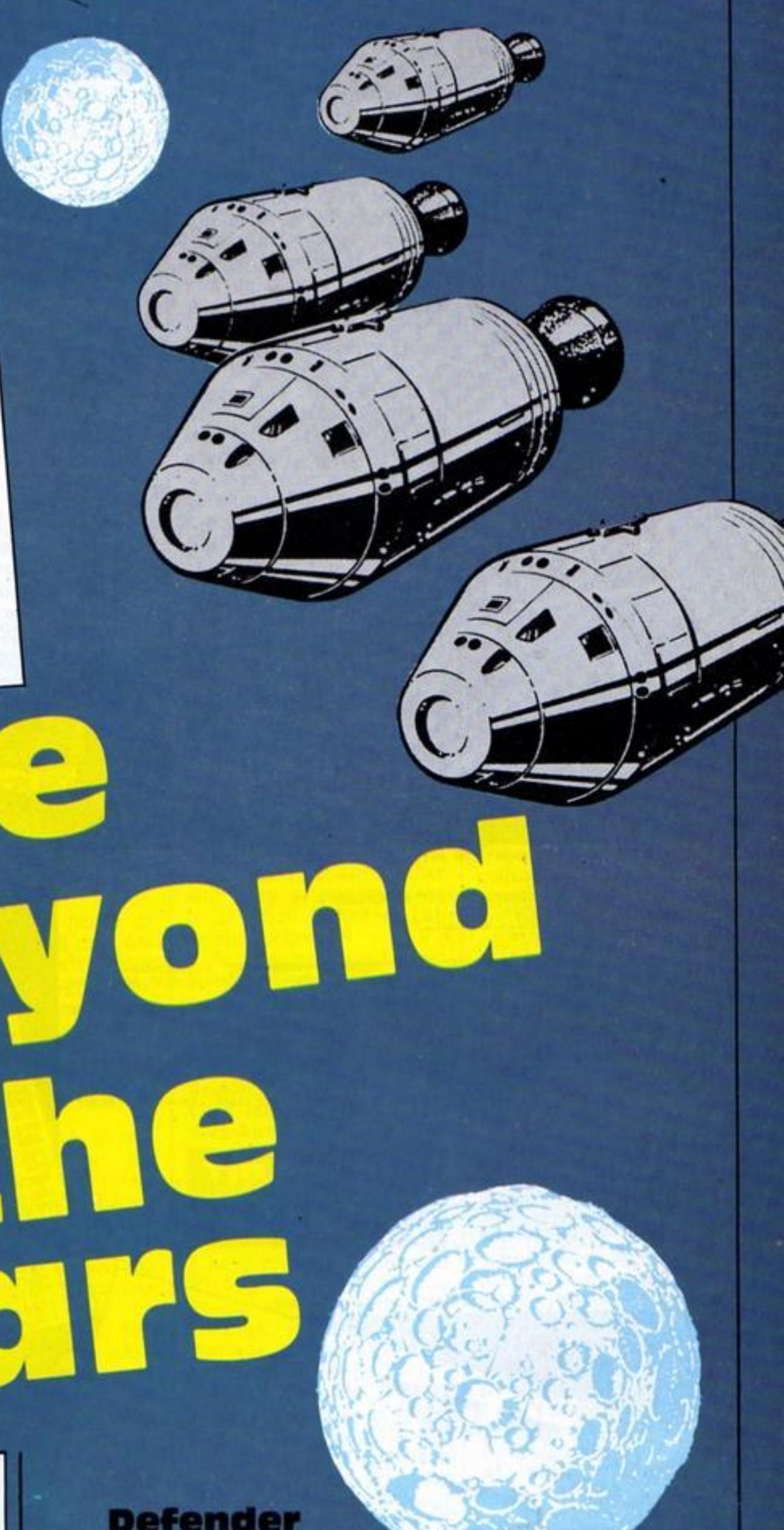
Load part 1, run it then type NEW and load part 2.

## Hints on conversion

This program should be easy to convert to another micro because it uses the standard Microsoft BASIC, but some of the commands are particular only to the Commodore machines.

Here are some of these commands:

7168-7679 start and end of the VIC character set  
 36869 hi-res mode  
 36874-36877 sound channels  
 36878 volume  
 36879 screen and border colour: SPECTRUM (INK & PAPER)  
**LEFTS,RIGHTS,MIDS** string slicing



## **VIC-20 PROGRAMS**

**Listing for Defender 1**

```

1 POKE52,28:POKE56,28
2 POKE36878,15
3 POKE36865,160
10 PRINT"POKE36879,9
20 PRINT"MOLESOFT PRESENTS-
30 PRINT"-
40 PRINT"-
50 PRINT"-
60 PRINT"DEFENDER"
65 PRINT"-
70 PRINT" BY:-
75 PRINT"-
80 PRINT"ADAM LOWE"
85 PRINT"-
90 PRINT"-
100 PRINT"-
110 PRINT"-
120 PRINT"-
130 PRINT"-
140 PRINT"-
150 PRINT"-
160 PRINT" DEFINING CHARACTERS- PLEASE WAIT-
165 FORI=160TO38STEP-.1:POKE36865,I:NEXT
170 FORI=7168TO7311:READA:POKEI,A:NEXT
175 FORI=7312TO7679:POKEI,PEEK(I*25600):NEXT
180 DATA0,0,240,223,223,216,240,192
185 DATA20,224,255,255,153,153,255,255
190 DATA63,255,255,31,249,249,31,255
195 DATA24,24,126,90,219,24,36,182
200 DATA126,90,255,215,186,126,153,255
205 DATA0,0,36,24,24,36,0,0
210 DATA255,255,255,255,255,255,255,255
215 DATA0,0,0,0,255,255,255,255
220 DATA40,85,178,285,285,178,85,40
225 DATA169,169,255,255,255,255,169,169
230 DATA19,72,151,75,35,187,140,255
235 DATA0,0,36,255,255,36,0,0
240 DATA139,218,170,138,138,138,138,139
245 DATA160,160,161,160,160,160,164,169
250 DATA93,149,21,149,85,85,149,29
255 DATA251,8,0,224,0,0,0,0
260 DATA224,128,128,128,128,128,176,176
265 DATA60,66,153,161,161,153,66,60
270 ORI=680TO711:READA$
```

```
362 R=RSC(R$)-48:B=RSC(RIGHT$(R$,1))-48:N=B+7*(B$9)+16*(A+7*(B$9))
363 POKE1,N:NEXT
364 FORI=712TO743:RERDRS
365 R=RSC(R$)-48:B=RSC(RIGHT$(R$,1))-48:N=B+7*(B$9)+16*(A+7*(B$9))
366 POKE1,N:NEXT
367 DATAFC,8E,90,R9,0F,8D,0E,90,R9,FE,8D,0C,90,R2,00,CA,00,FD,CE,0C,90,AD,0C,90,
C9,7F,D8
368 DATAF1,8C,0E,90,60,R9,FF,8D,0D,90,R2,0F,8E,0E,90,R2,50,R8,00,00,D8,FD,CA,D8,
F8,CE
369 DATA0E,90,D0,F1,8C,0D,90,0C,0E,90,68
370 FORP1=8TO22:POKE36865,38+P1:POKE36864,12+P1:NEXT:POKE36866,150-P1
371 POKE36867,174-P1*2:POKE36876,220+P1:NEXT:POKE36876,0
375 POKE36869,255
376 PRINT"J"
380 PRINT" B8 $--YOU"
390 PRINT" C $--HUMAN"
400 PRINT" E $--ALIEN FIRE"
410 PRINT" D $--ALIEN"
420 PRINT" F G $--TERRAIN"
430 PRINT" H I J $--EXPLOSIONS"
440 PRINT" K $--LASER"
510 PRINT" LMNOPI*****LMNOPI Q"
520 PRINT" "
530 PRINT"X"
530 FORP1=22TO8STEP-1:POKE36864,12+P1:POKE36865,38+P1:POKE36866,150-P1,
600 FORI=22TO8STEP-1:POKE36867,174-P1*2:POKE36876,220+P1:NEXT:POKE36876,8
601 PRINT" *****HIT ANY KEY"
610 PRINT" "
610 FORI=6TO17
620 FORI=6TO17
621 POKE8898+1+30720,8
622 NEXT:FORT=1TO18:NEXT
623 GETA$:IFRS<>""THEN650
624 FORI=6TO17
625 POKE8898+1+30720,1
626 NEXT:FORT=1TO18:NEXT
627 GOTO628
650 NEW
```

### **Listing for Defender 2**

0, B(8)  
36876  
38, 18  
4-P1  
5867.  
650 X(L)=INT(RND(1)\*10)+10:Y(L)=INT(RND(1)\*5)+10:FI(L)=  
660 IFRNDE(1)>:8THENF\$(L)="M"  
670 FORMATO2:IFAC(M)<25THEN700  
675 PRINT"SCORE=";S:PRINT"-----";H="HIGH PRINT"CAPTURED=";H  
680 C=INT(RND(1)\*3):IFX(C)=990:IF(C)=97ANDF\$(C)=""M"THEN750  
690 A(M)=X(C):B(M)=Y(C):GOT0710  
700 PRINTLEFT\$(D\$,B(M)):LEFT\$(X#,A(M))=" "  
710 B(M)=B(M)+(B(M)\*B):LEFT\$(X#,A(M))=" "  
720 A(M)=A(M)+(A(M)\*B):LEFT\$(X#,A(M))=" "  
730 PRINTLEFT\$(D\$,B(M)):LEFT\$(X#,A(M))=" "  
740 IFR(M)>6ANDA(M)<10ANDB(M)<Y+1THEN990  
750 NEXTL:IFH(1)>10THEN210  
760 GOT0980  
770 FORI=8142TO8162:POKEI,PEEK(I+1):NEXT  
780 IFPEEK(7698+Y#22)<32THEN990  
800 IFRND(1)>:5THENPOKE8163,6:GOT0840  
810 IFRND(1)>:5THENPOKE8163,7:GOT0840  
820 IFRND(1)>:7THENPOKE8163,3:GOT0840  
840 POKE8163,32  
850 FORI=8702:IFX(I)=99THEN940  
855 IFX(I)>0THEN990  
860 PRINTLEFT\$(D\$,Y(I))=" ";IFF\$(I)="U"THENPRINT" "H#H+1  
870 X(I)=20:Y(I)=INT(RND(1)\*8)+10:F\$(I)="D"  
880 IFRND(1)>:8THENF\$(I)="M"  
890 X(I)=X(I)-1:PRINTLEFT\$(D\$,Y(I)):LEFT\$(X#,X(I)):IFF\$(I)="M"THEN930  
910 PRINT"AD ";  
920 GOT0940  
930 PRINT"AD "  
940 IFR(I)=99THEN970  
950 IFR(I)<0THENPRINTLEFT\$(D\$,B(I))=" ";A(I)=99:GOT0970  
960 A(I)=A(I)-1:PRINTLEFT\$(D\$,B(I)):LEFT\$(X#,A(I))=" "  
970 NEXTI:RETURN  
980 POKER2,15:POKER,220:FORI=1TO500:NEXTPOKER,130:FORI=1TO300:NEXT  
990 FORI=1TO8:D(I)=7910:NEXT  
995 FORDF=1TO10



Now that the Oric-1 has grown a respectable keyboard, improved its ROM, and renamed itself the Atmos, it can at last be seriously considered for a real application like word processing.

But to use any micro as a word processor you require the necessary software. My program will convert your 48K Oric (both old and new ROM) to a simple word processor.

While it will not match the facilities of expensive commercial software, it will provide most home users of Oric computers with most of their requirements. As an example, this article was written using the program, and you won't find many mistakes with that!

Most of the program is written in BASIC, so professional typists may find the response a little slow. However, those like myself who rely on two index fingers should find this no problem. Parts are in machine code, so it is important to SAVE the program on tape before you RUN it just in case you made a slight mistake in entering the listing.

The program operates in two modes, text and control. A

#### How it works

**1000-1570** main subroutines  
**1000-1030** call machine code routine to transfer text to screen  
**1050-1090** main routine for top of screen messages  
**1100-1120** text mode message  
**1150-1170** control mode message  
**1200-1220** erase top of screen message  
**1250-1290** check for a keypress, call delay if required  
**1300-1330** repeat key delay  
**1400-1440** scroll up when cursor down key is pressed, and cursor is at base of screen  
**1450-1480** scroll down when cursor is moved up off screen  
**1500-1530** scroll up when text overflows on the screen  
**1550-1570** place topline attributes for black letters on white background  
**2000-2195** main text routine — checks for keypress, ESC, DEL, RETURN, or cursor key. If a valid character, place on screen and text file, and update cursor.  
**3000-3020** place end of paragraph marker  
**3100-3180** insert/delete routines  
**3200-3560** cursor move routines  
**4000-4150** control mode — options menu and selection  
**4200-4270** save file on tape  
**4300-4380** load file from tape  
**4400-4460** erase file from memory  
**4500-4830** output text to printer  
**5000-5180** initialise main variables, locate machine code, set up empty text file  
**7100-8000** DATA for machine code routines and keypress check array

# Put it in writing the easy way

**Give your letters the professional touch, thanks to David Nowotnik's program for the Oric and Atmos**

reminder of the mode appears at the top of the screen in case you should forget.

When you RUN the program, you'll enter TEXT mode. You'll notice that the screen is black, but the top of the screen message has an unusual white background. The character square at the top left of the screen is the cursor; if you press a few keys then the corresponding letters will appear on the screen following the cursor.

If you make a mistake there are several ways to correct it.

You can use the cursor control keys to move the cursor (in the direction of the arrow). If you use the back space cursor, you can place the cursor over the mistyped letter, and replace it with the right letter, then move the cursor back to its previous position (with the cursor right key). If you wish, the cursor can be moved up or down the screen as well.

There may be a need to delete one or more letters, or to open up a space between letters in correcting what you have written.

To delete a letter, move the cursor to the letter you wish to remove, then press the DEL key. All the letters to the right of the cursor will be moved one space to the left. To open up a space, press DEL and SHIFT; all the letters to the right of the cursor will be moved one space to the right.

To indicate to the computer that you've come to the end of a paragraph, press RETURN.

On the screen you'll see a black vertical line on a white background. This is the end of paragraph marker. On the screen the letters will continue on the same line, but when you come to print out your text, a new paragraph will start every time an end of paragraph marker is found.

Another thing that a word processor allows you to forget are words over-running from one line to the next. This is also corrected when text is sent to the printer.

This program allows you up to 400 lines of 40 characters in its text file. Using the cursor control keys you can move up or down through the text file on



the screen. Text will scroll up or down automatically when the cursor is at the bottom or the top of the screen. And there is auto repeat on all keys, including the cursor keys, to make this movement easier.

You can obtain CONTROL mode readily by pressing the ESC key at any time. This mode gives five options: you can save the text file on tape, load it back from tape, erase the text, output to printer, or return to TEXT mode.

With the save and load options you give a file name for the text file. With the load and erase options you are asked to confirm this request, as both will remove entirely any text in the computer's memory.

When you select output mode, you have to respond to several questions; the page length (normally 11 or 12 inches), the line spacing (1 or 2 — single or double spacing), and the number of lines per page.

The program assumes six lines per inch, so if your printer has something else, then you may require some program line changes. The program also assumes you are using an 80 column printer; you can select the left and right margin. Once all this data is in the computer, you get a hard copy of your text.

A final tip to Oric-1 users: normally your Oric would not allow you to load a block of bytes from an instruction within a program. There are two tricks used in this program which allow you to do this.

Notice the SAVE command (line 4260) is for auto-run. The first byte of the block of text when you re-LOAD contains the machine code RTS instruction (byte value hex 60) which returns the computer automatically to BASIC, to the point from where it left in the program. Also the end of BASIC system variable is restored (line 4365). Without these steps, the Oric-1 would lose the BASIC program.

#### Main variables

**PS** cursor position in display file  
**PT** cursor position in text file  
**TS** top of screen position in text file  
**MC** last character position in text file  
**CR,CH** character ASCII numbers  
**KEY,K1** keypress indicators  
**COUNT** delay counter for repeat key  
**MS** top of screen message string  
**PL** page length  
**LS** line spacing  
**NL** number of lines per page  
**LM** left margin  
**RM** right margin  
**QT** character counter

# PROGRAM

```
10 REM Word Processor
20 REM by David Nowotnik
30 REM April, 1984
40 REM
50 GOTO5000
1000 REM Screen refresh
1010 DOKE0,TS:DOKE2,49120
1020 DOKE4,48040:CALL1049
1030 RETURN
1050 REM Top of screen message
1060 X=48002
1070 FORI=1TOLEN(M$)
1080 POKEX,ASC(MID$(M$,I,1))
1090 X=X+1:NEXTI:RETURN
1100 REM Text Message
1110 M$="Text Mode"
1120 GOSUB1050:RETURN
1150 REM Control Message
1160 M$="Control Mode"
1170 GOSUB1050:RETURN
1200 REM Clear top of screen
1210 M$=""
1220 GOSUB1050:RETURN
1250 REM Check for a key press
1260 KEY=PEEK(520):IND=0
1270 IFKEY=K1THENGOSUB1300
1280 IFIND=0THENK1=KEY:COUNT=10
1290 CR=PEEK(735):RETURN
1300 REM Delay in repeat key
1310 COUNT=COUNT-1
1320 IFCOUNT>1THENIND=1ELSEIND=2
1330 RETURN
1400 REM Scroll up 1
1410 PS=PS-40
1420 IFTS>62920THENRETURN
1430 TS=TS+40
1440 GOSUB1000:RETURN
1450 REM Scroll down
1460 IF TS<#6001THENRETURN
1470 TS=TS-40:PT=PT-40
1480 GOSUB1000:RETURN
1500 REM Scroll up 2
1510 IFTS>62920THENRETURN
1520 TS=TS+40:PT=PT+40
1530 GOSUB1000:RETURN
1550 REM Replace top line attribute
1560 POKE48000,23:POKE48001,0
1570 GOSUB1200:RETURN
2000 REM Text Entry - Main routine
2010 GOSUB1100
2030 CH=PEEK(PT)
2040 IFCH<128THENPOKEPS,CH+128
2050 GOSUB1250
2060 IFKEY=560RIND=1THEN2050
2070 IFCR>159ANDCR<255THEN2140
2080 P=0:FORI=1TO7
2090 IFD(I)=KEYTHENP=I
2100 NEXTI:IFP=0THEN2030
2110 IFP=7THEN4000
2120 DNPGOSUB3000,3100,3200,3300,3400,3500
2130 IFP=1THEN2170ELSE2030
2140 IFPT>#9E8FTHEN2030
2150 POKEPS,CR-128
2160 POKEPT,CR-128
2170 PS=PS+1:PT=PT+1
2180 IFPS>49119THENGOSUB1400
2190 IFPT>MCTHENMC=PT
2195 GOTO2030
3000 REM Return
3010 POKEPS,252:POKEPT,252
3020 RETURN
3100 REM Delete/Insert
3110 IFPEEK(521)=1640RPEEK(521)=167THEN3150
3115 IFPT=MCTHENRETURN
3120 DOKE0,PT:DOKE2,MC+1:CH=PEEK(PS+1)
3130 CALL1113:MC=MC-1
3140 GOSUB1000:RETURN
3150 IFMC<=PTTHENRETURN
3155 DOKE0,PT-1:DOKE2,MC
3160 CALL1080:MC=MC+1
3170 POKEPT,32
3180 GOSUB1000:RETURN
3200 REM Cursor left
3210 IFPS<48041THENRETURN
3220 POKEPS,CH
3230 PS=PS-1:PT=PT-1
3240 RETURN
3300 REM Cursor right
3310 IFPS>49118THENRETURN
3320 POKEPS,CH
3330 PS=PS+1:PT=PT+1
3340 RETURN
3400 REM Cursor up
3410 IFPS<48080THEN3450
3420 POKEPS,CH
3430 PS=PS-40:PT=PT-40
3440 RETURN
3450 GOSUB1450:RETURN
3500 REM Cursor down
3510 IFPS>49079THEN3550
3520 POKEPS,CH
3530 PS=PS+40:PT=PT+40
3540 RETURN
3550 IFPT>#9E70THENRETURN
3560 GOSUB1500:RETURN
4000 REM Control Mode
4010 GOSUB1150:CLS
4020 PRINT:PRINT:PRINT:PRINT" Options:-
4030 PRINT:PRINT" 1. Save text file on tape."
4040 PRINT:PRINT" 2. Load text file from tape."
4050 PRINT:PRINT" 3. Erase text file from memory."
4060 PRINT:PRINT" 4. Output text file to printer."
4070 PRINT:PRINT" 5. Return to text mode."
4080 PRINT:PRINT:PRINT" Select 1,2,3,4, or 5"
4090 IFPEEK(735)<1770RPEEK(735)>181THEN4090
4100 X=PEEK(735)-176
```

```
4110 IFX=5THEN4150
4120 DNXGOSUB4200,4300,4400,4500,4990
4130 GOTO4000
4150 GOSUB1000:GOTO2000
4200 REM Save file on tape
4210 CLS:PRINT:PRINT:PRINT" Save on tape.":CHR$(17)
4215 POKE735,0
4220 PRINT:PRINT:INPUT" Enter file name ";N$
4230 PRINT:PRINT:PRINT" Press record, then the space bar";CHR$(17)
4240 IFKEY$<>" THEN4240
4250 POKE#5FFD,#60:DOKE#5FFE,MC
4260 C$AVEN$,A#5FFD,EMC,AUTO
4270 GOSUB1550:RETURN
4300 REM Load file from tape
4310 CLS:PRINT:PRINT:PRINT" Load file from tape.":PRINT:PRINT" Are you sure?
(y/n)"
```

## ORIC/ATMOS PROGRAM

```
4320 GOSUB1250:IFCR=2170RCR=249THEN4340
4330 IFCR=238THENRETURNSE4320
4335 POKE735,0
4340 PRINT:PRINT:PRINTCHR$(17):INPUT" Enter the file name ";N$
4350 PRINTCHR$(17):DOKE0,#6000:DOKE2,#9E90:CALL1024
4360 CLOADN$
4365 DOKE#9C,DEEK(#BFE0)
4370 MC=DEEK(#5FFE):PS=48040
4380 PT=#6000:TS=PT:GOSUB1550:RETURN
4400 REM Erase file from memory
4410 CLS:PRINT:PRINT:PRINT" Erase file from memory.":PRINT:PRINT" Are you sure
? (y/n)"
4420 GOSUB1250:IFCR=2170RCR=249THEN4440
4430 IFCR=238THENRETURNSE4420
4440 DOKE0,#6000:DOKE2,#9E90:CALL1024
4450 PT=#6000:TS=PT
4460 MC=PT:PS=48040:RETURN
4500 REM Printer output
4505 IFMC<#6002THENRETURN
4510 CLS:PRINT:PRINT:PRINT" Output text to printer";CHR$(17)
4515 POKE735,0
4520 PRINT:INPUT" 1. Select page length (inches) ";PL
4530 IFPL<20RPL>>INT(PL)THEN4520
4540 PRINT:INPUT" 2. Input line spacing (1 or 2) ";LS
4550 IFLS<10RLS>20RLS>>INT(LS)THEN4540
4560 PRINT:INPUT" 3. Number of lines per page ";NL
4570 IFNL<20RNL>(6/LS)*PLRNL>>INT(NL)THEN4560
4580 PRINT:INPUT" 4. Left Margin (0 to 70) ";LM
4590 IFLM<00RLM>700RLM>>INT(LM)THEN4580
4600 PRINT:INPUT" 5. Right Margin (10 to 80) ";RM
4610 IFRM<=LM0RRM<100RRM>800RRM>>INT(RM)THEN4600.
4620 QT=#6000:W=RM-LM+1:CT=0:CLS:PRINT:PRINT" Press ESC to escape!"
4630 REPEAT
4640 IFPEEK(521)=169THEN4830
4650 FORI=OTOW
4660 IFPEEK(I+QT)=252THEN4730
4670 NEXTI
4680 FORI=WTOOSTEP-1
4690 IFPEEK(I+QT)=32THEN4730
4700 NEXTI
4720 I=W
4730 Z$="" : IFLM=0THEN4750
4740 FORJ=1TOLM:Z$=Z$+" ":"NEXTJ:IFI=0THEN4760
4750 FORK=OTOI-1:Z$=Z$+CHR$(PEEK(K+QT)):NEXTK
4760 LPRINTZ$:CT=CT+1
4770 IFLS=2THENLPRINT
4780 QT=QT+I+1
4790 IFCT<=NLTHEN4820
4800 CT=0:FORI=1TOPL*6-NL*LS
4810 LPRINT:NEXTI
4820 UNTILQT>MC
4830 PRINTCHR$(17);:RETURN
4990 STOP
5000 REM Initialise
5010 TEXT:HIMEM#59FB:DOKE#BFE0,DEEK(#9C)
5020 PS=48040:PT=#6000:TS=PT
5030 DIMD(7):MC=#6000
5040 POKE524,127:POKE618,10
5050 IFPEEK(#EB68)=72THENAT=1ELSEAT=0
5060 READA:IFA<>#55THEN5060
5070 X=1024
5080 READA:IFA=#55THEN5100
5090 POKEX,A:X=X+1:GOT05080
5100 FORI=1T07:READD(I):NEXT
5110 DOKE0,PT:DOKE2,#9E90:CALL1024,
5120 GOSUB1000
5130 GOSUB1550
5180 GOSUB1200:GOTO2000
7100 DATA#55
7500 DATA #A0,#00,#A9,#20,#91,#00,#E6,#00,#D0,#02,#E6,#01,#A5,#00,#C5,#02,#D0
7510 DATA #F0,#A5,#01,#C5,#03,#D0,#EA,#60,#A0,#00,#B1,#00,#91,#04,#E6,#00,#D0
7520 DATA #02,#E6,#01,#E6,#04,#D0,#02,#E6,#05,#A5,#02,#C5,#04,#D0,#EA,#A5,#03
7530 DATA #C5,#05,#D0,#E4,#60
7540 DATA #A0,#00,#B1,#02,#C8,#91,#02,#38,#A5,#02,#E9,#01,#85,#02,#A5,#03,#E9
7550 DATA #00,#85,#03,#A5,#00,#C5,#02,#D0,#E6,#A5,#01,#C5,#03,#D0,#E0,#60,#A0
7560 DATA #01,#B1,#00,#88,#91,#00,#18,#A5,#00,#69,#01,#85,#00,#A5,#01,#69,#00
7570 DATA #85,#01,#A5,#00,#C5,#02,#D0,#E6,#A5,#01,#C5,#03,#D0,#E0,#60,#55
8000 DATA175,173,172,188,156,180,169
```

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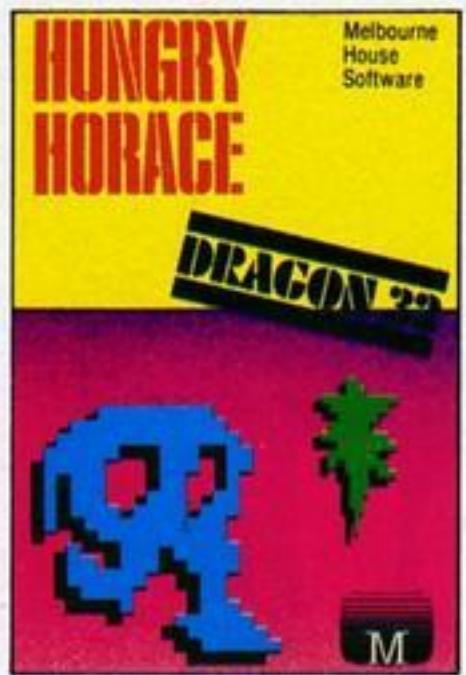
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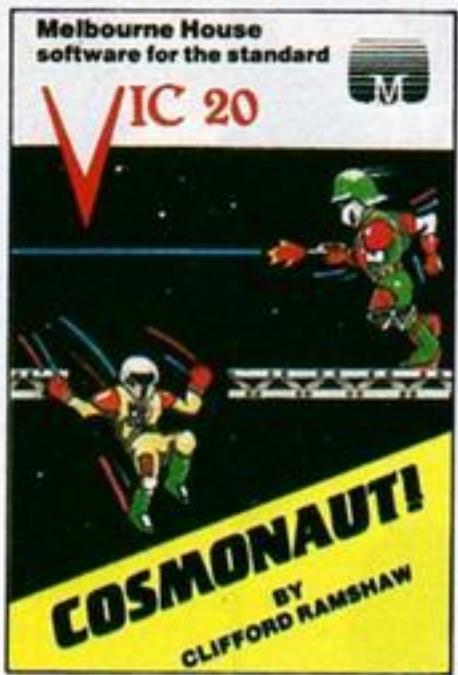
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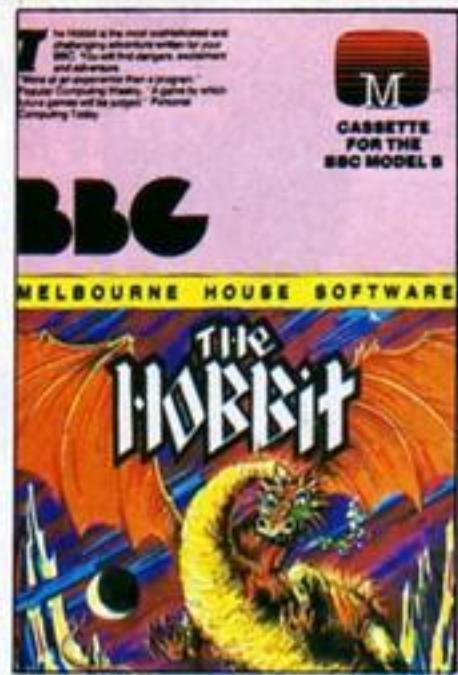
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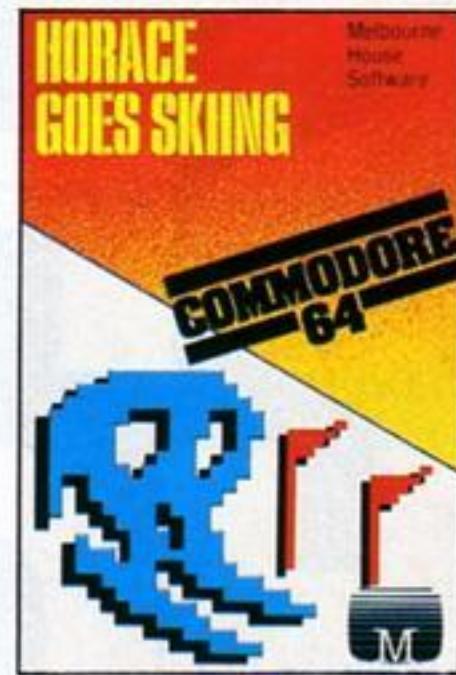
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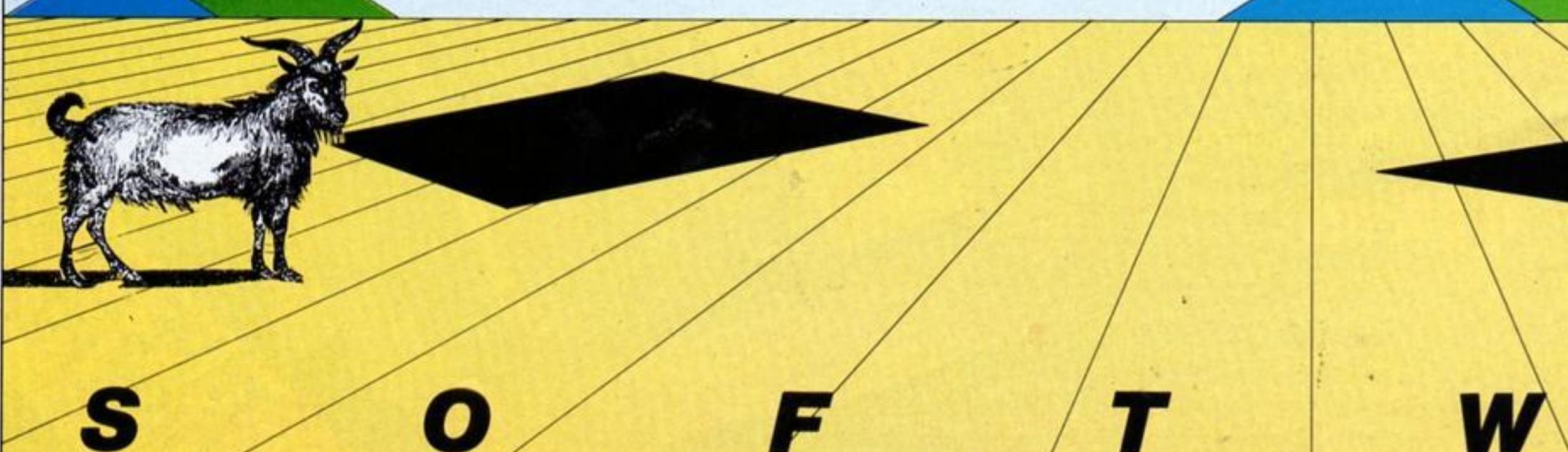
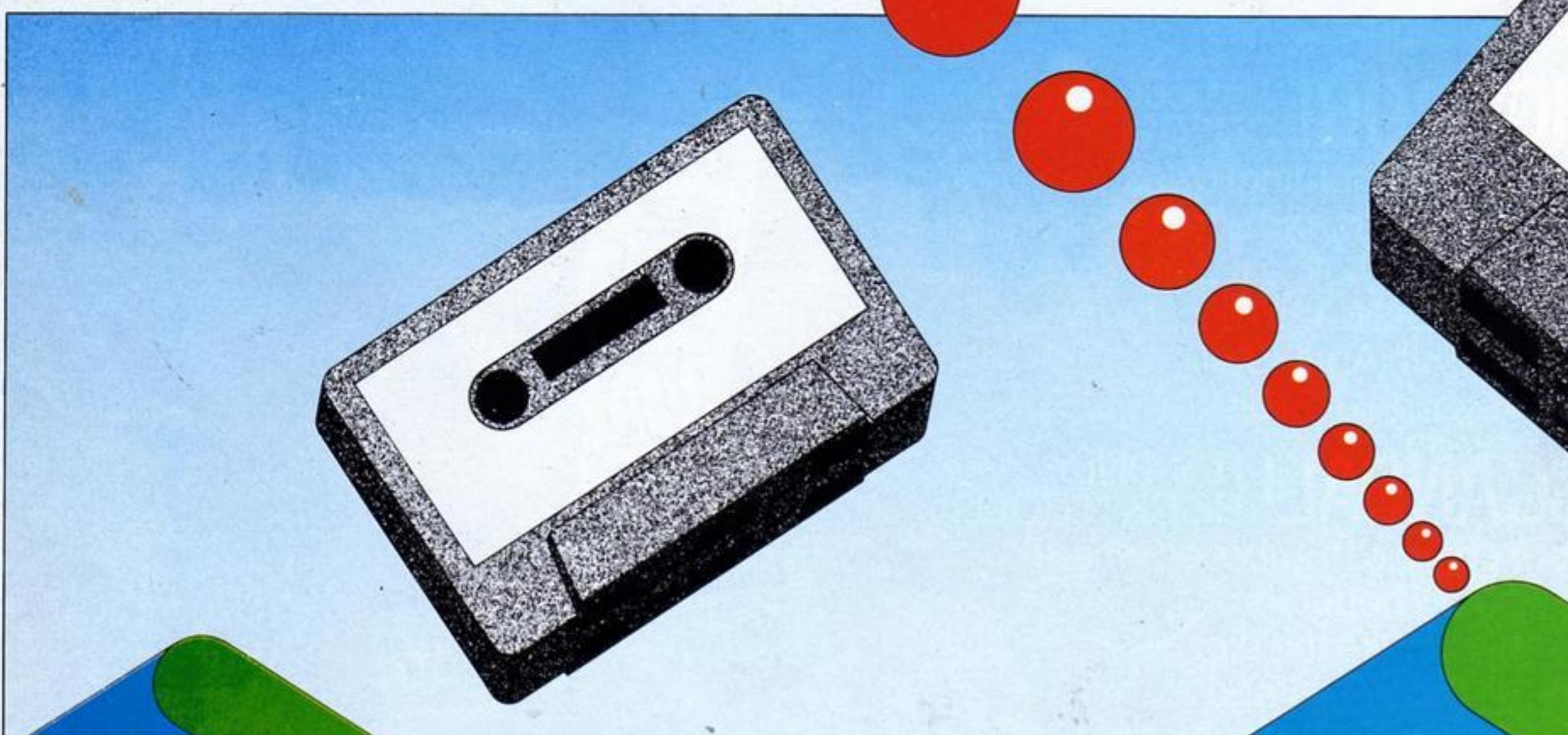


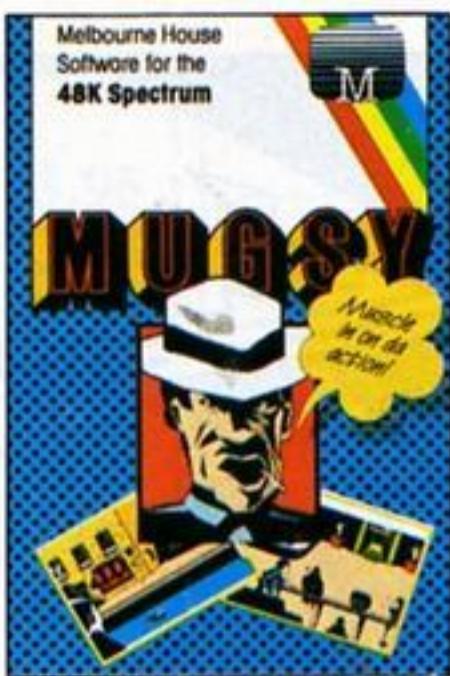
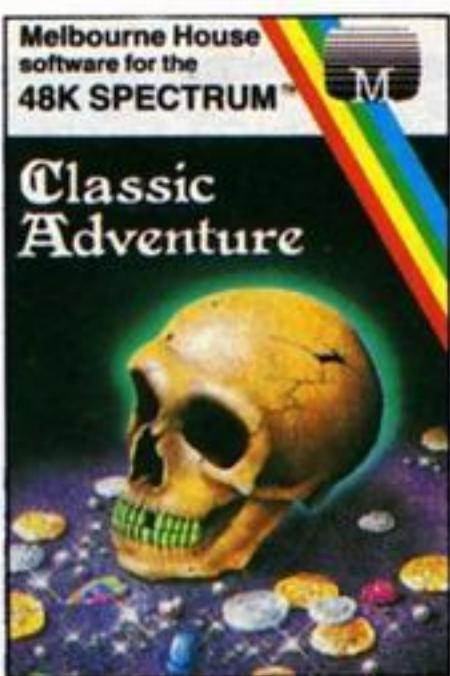
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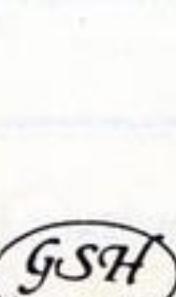
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### ONE DAD'S VIEW

# We're still learning

Are computer games a waste of time? We bought a Spectrum a few months ago, like so many people convinced by the daily propaganda that we might get left out of the dawning New Age and with a young son destined to grow up in it.

At the beginning we spent many hours typing games programs from books and magazines, some of which — to our amazement — actually worked. Our son, aged 10, drew and coloured some nice inlays in imitation of the commercial product, with careful pictures, lettering and instructions.

We became naturally curious about how the games worked and how we could adapt or improve them, and imperceptibly picked up some elements of BASIC.

However, the commercial games have got so good (at least the best have — some are rubbish) that they have gradually taken over, and copying in BASIC games seems time wasted by comparison.

And yet I (aged 35) find nothing so relaxing when tense as an absorbing game. My son enjoys solving the problems of *Atic Atac* or *Jet Set Willy*, and he reads a lot of reviews in some quite intelligent magazines. (I don't think he would be reading Shakespeare without this distraction, anyway.) His vocabulary is expanding naturally.

He sometimes produces complex drawings inspired by screens from *Scuba Dive* or *Lunar Jetman*, which shows that the arcade heroes can have a kind of autonomous existence in the child's imagination beyond the game itself. *Games Designer* has an inbuilt creative element which a young child can enjoy.

But still, despite all this creative spin-off, I want to get back to those first weeks when we were learning some programming skills, however elementary. We need good publications giving not just listings but detailed descriptions of how they work and how they can be adapted. Let there be practical as well as fun programs, otherwise the new killer crippling disease of "micro hunch" will set in.

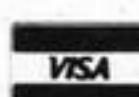
And please, publishers, do not forget that the home micro phenomenon is so recent that most of us out here are not much more than absolute beginners, rather nervous and easily discouraged, especially by untried bug-ridden listings.

R.S. Greenwood  
Kirkintilloch, Glasgow

• This space is for you to sound off about the micro scene, to present bouquets, to hurl brickbats, or just to share your opinions or experiences. Contributions from individuals earn a fee. Send your views to Paul Liptrot, Editor, Home Computing Weekly, No.1 Golden Square, London W1R 3AB

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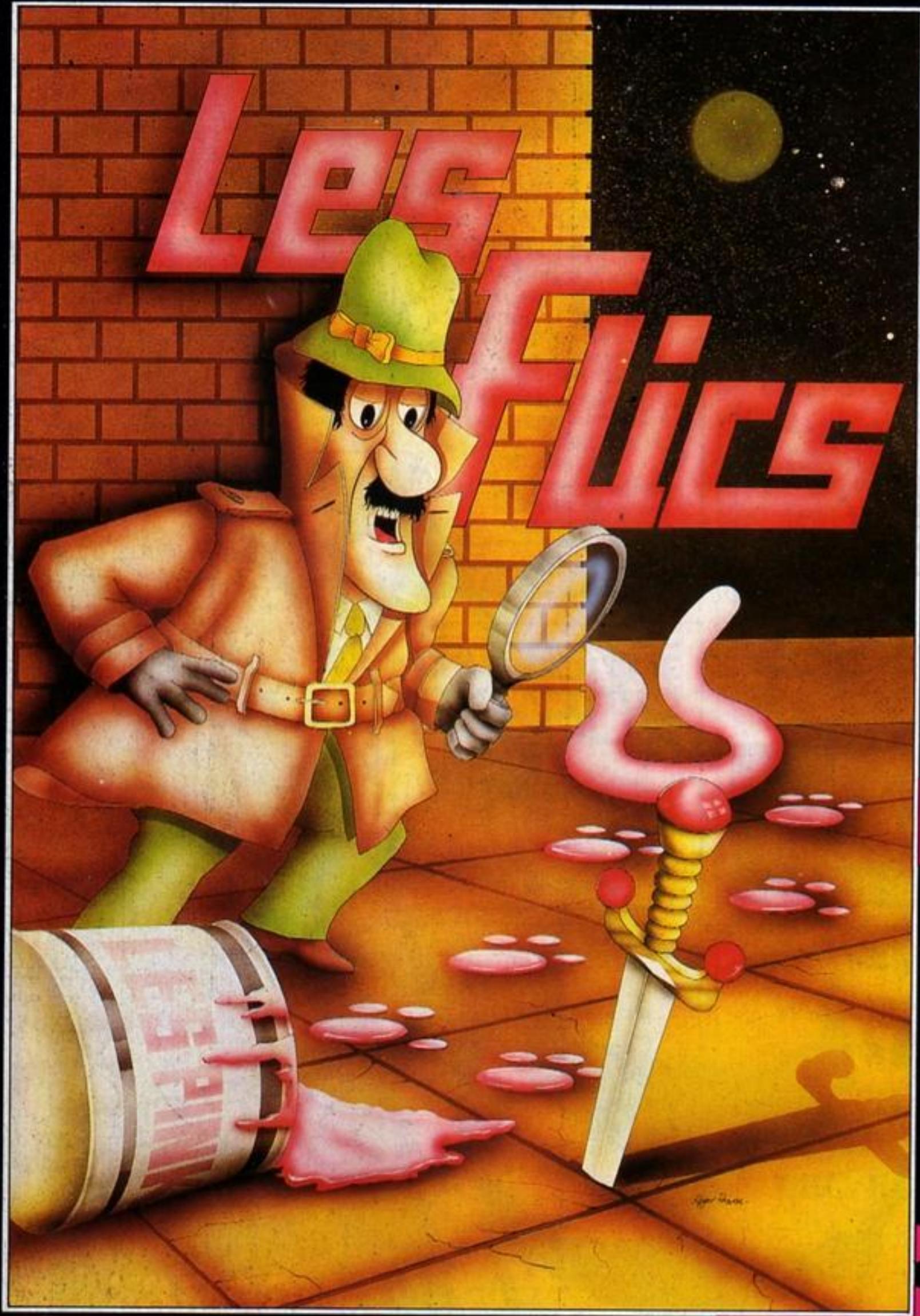
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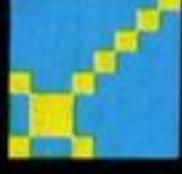
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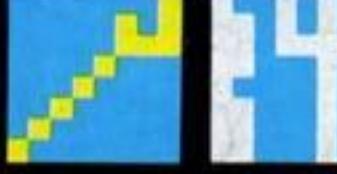
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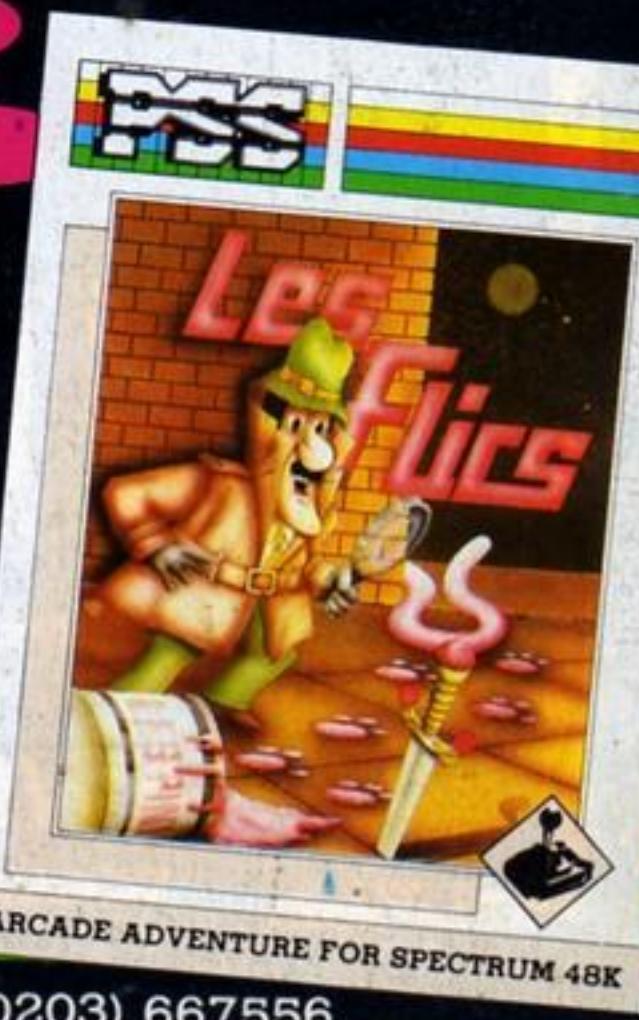
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